

# The Glock Exotic Weapons System



# Introduction

The early 1900s signaled the beginning of a new era in modern service pistol development. From the fertile mind of America's most famous gun inventor, John M. Browning, came what was to be the most legendary combat handgun of all time—the Government Model 1911, better known as the Colt .45 Automatic. Undoubtedly, this pistol masterpiece started it all. For almost a century, this magnificent warhorse set the standard by which all other service-class pistols that followed would be judged.

Metallurgical advancements, along with the exploration of new manufacturing methods and modern materials, have rapidly changed the course of small-arms innovations. Germany can take the credit for pioneering the use of plastics in the manufacture of combat arms, going back to World War II and the introduction of the MP-40 submachine gun (SMG). After the war, similar plastic materials were used on second-generation military rifle furniture, most notably the early American AR-10, M16, and M14; German G3; Belgian FAL, and others. The composite worked quite well with the MP-40 SMG firing pistol-caliber ammunition, but the plastic materials incorporated in the full-powered assault rifles proved less desirable after being unable to take abuse (e.g. cracking when dropped on solid ground) and were easily affected by varying climatic conditions. While the development of stronger polymer

material was under way, wood continued to be used on military hardware up until the latter part of the 1970s.

By the early 1980s, a new supertough polymer had finally become a reality. Polymer 2 possessed strength and durability unknown in early plastics. This new space-age material was virtually indestructible and less susceptible to warping or cracking even under the most severe climatic conditions, making it the ideal component for a true ultramodern combat arm for the new millennium. Prime examples of these 21st century polymer military marvels include the pioneering Austrian Steyr AUG and the latest German-made contender, the G36 assault rifle.

From burst-firing Broomhandle Mauser machine pistols of the 1930s to Hitler's battalion-clearing MG-34 machine guns of World War II, Germany led the way in the new wave of small-arms development. After the war, most of the original military gunmakers of the Third Reich (except Walther and Mauser) ceased operation. It was the newly formed company of Heckler & Koch that carried on with the development and production of advanced weaponry for the modern warrior. This well-respected company also pioneered the use of modern polymer in the manufacture of its service-class handguns, most notably the futuristic 9mm double-action-only VP-70.

The VP-70, which debuted in the early '70s, was the first polymer-

framed self-loading pistol in its class, packing an impressive 18-shot magazine combined with blowback action and a striker-fire mechanism. The major drawbacks of the VP-70 were its massive size and excessively heavy trigger pull. A three-round burst-firing model with shoulder stock attachment called VP-70M was offered to the law enforcement market. Ironically, despite the many futuristic characteristics built into the VP-70 pistol, it has failed to gain the market it was aimed for. Presumably it came too soon, at a time when the buying public and law enforcement community were not ready to embrace the belief that the new wonder polymer would stand up to modern ammunition pressures. Since the introduction of self-loading firearms, gun inventors had believed that only ordnance steel could provide safe and reliable operation.

Then came Gaston Glock, a little-known engineer from Vienna, Austria. In 1963, he founded Glock G.m.b.H. in the Viennese suburb of

Deutsch-Wagram. (The new company's first products were door parts for the local market.) As his company gradually expanded, Glock designed and manufactured a variety of military and police-related equipment including knives, entrenching tools, non-disintegrating machine gun belts, and fragmentation hand grenades for training. In 1982 Glock—now one of the most celebrated gun inventors of the 20<sup>th</sup> century—produced his first firearm, the Model 17.

By the year 2000, Gaston Glock's patented polymer pistol had become a successful service pistol, used by thousands of police departments and dozens of military forces around the world. This wonder gun also became a top choice among civilian gun owners for personal carry and defensive applications. With over two million produced to date and 15 different models to choose from, the Glock pistol will no doubt continue to set new standards in the design and manufacture of hi-tech polymer handguns for years to come.

# Design and Function

### **THE MODEL 18: GLOCK'S MYSTERIOUS POLICE MACHINE PISTOL**

The Glock is unquestionably one of the finest handguns in the world. Although the space-age polymer frame and superior ergonomics are the primary features of this weapon, its outright mechanical simplicity is unbeatable. It took a while to finally convince die-hard aficionados in North America (who favored all-steel handguns over this toylike polymer version), but it soon became apparent that this brainchild of an Austrian inventor was the shape of things to come.

Of the many interesting pistol variants currently offered by Glock G.m.b.H. in Austria, the Model 18 is the rarest. It was originally produced in limited quantities for an Austrian antiterrorist unit. A few samples were brought into the United States for law enforcement evaluations sometime in 1989 and received favorable reviews; however, distribution of the machine pistol in North America is restricted to police tactical units and VIP protection agents. For this reason, Glock's Model 18 pocket machine gun will remain the most sought-after model by private machine gun collectors and professional criminals alike.

The Model 18, which is only produced in 9mm Para, is a direct

descendant of the first Glock pistol, the Model 17, which is chambered for the popular 9mm Parabellum. The Model 18 features a selective-fire capability and delivers 1,200 rounds per minute (rpm) in fully automatic mode. Except for the fire-selector switch mounted to the left side of the slide where the grasping serrations of the slide are cut, the full-auto gun closely resembles the earlier Model 17.

The large-diameter fire-selector pin that connects with the slide acts as the tripping shoulder to the sear when the selector is set at full auto. The camming shoulder of the pin depresses the sear just before the slide reaches its full forward recoil releasing the striker to fire the gun. With the selector switch rotated upward (semiauto), its camming shoulder moves out of the way, thus preventing mechanical tripping of the sear as the slide completes its full forward recoil resulting in semiauto fire. To prevent unauthorized individuals from converting their semiauto Glocks to machine guns, dimensional changes were done in the Model 18 so that its full-auto components would not be interchangeable with the parts of the civilian models.

Larger calibers such as the popular .40-caliber S&W and big-bore .45-caliber ACP will be more difficult to control in full-automatic mode than the smaller 9mm version. With no provision for front grip and shoulder-stock attachments, a .40- or .45-caliber machine pistol using a





Left-side view of the magnificent Glock Model 18 machine pistol chambered for the 9mm Parabellum. The fire selector is mounted at the rear of the slide and is set for full-auto firing. This is the 21st century machine pistol. (Inset) Aero-Tek's laser-equipped Law 2000. This is a highly customized Glock featuring the Hybrid compensator system complemented by the company's own custom accessories.



Right-side view of the second-generation Glock Model 21 chambered for the powerful .45 ACP. First-generation Glocks have plain grips (no square serrations on front and back of grip). Third-generation and current models feature finger grooves and side rails on the frames as well as square serrations.



Fieldstripped view of the semiauto Glock Model 21.

light plastic frame will start to rise uncontrollably in long burst mode as the magazine capacity passes its halfway mark. The Model 18 has no burst-control device and produces an average of 1,200 rpm in full-auto mode. To be fully effective, the ideal candidate for full-auto conversion among Glock pistol models would be the Model G-34 (9mm) and Model G-35 (.40 S&W). These two pistols are Glock's top-of-the-line competition versions and feature the long-slide format with ported barrels for recoil and muzzle-rise reduction advantage. The new models also incorporate nicely contoured finger grooves for more positive hold and accessory rails for mounting a laser sighting device or a small flashlight. The frame side rails can also double as a detachable front grip attachment to further maximize control of the converted gun. A new company called CCF/Swiss Inc. currently markets a detachable folding stock for the Glock Model 18 machine pistol. This stock simply attaches to the opening of the grip just behind the magazine chute with no alteration to the pistol frame required. Add this accessory along with a



Lower half of the Glock pistol showing the original semiauto trigger mechanism prior to full-auto conversion.

front grip and you will have the most versatile fully controllable machine pistol in its class.

Those who desire a selective-fire Glock but do not favor the long-slide versions may want to consider the newly upgraded regular full-size models that incorporate finger grooves, side rails, and ported barrels. This lineup includes the Model G-22 (.40 S&W), Model G-31 (.357 SIG), Model G-20 (10mm), and Model G-21 (.45 ACP). In compact versions, the following miniguns are also offered with ported barrels and frame rails: Model G-19 (9mm), Model G-23 (.40 S&W), and Model G-32 (.357 SIG). Firing these miniscule semis in full-auto mode is quite an experience. But remember, never attempt to fire a long burst, especially with these miniguns, until you have mastered shooting them with total control in full auto. If you lose control of the weapon while firing, it will become a runaway gun and may pose a danger to you and those around you. Practice quick release of the trigger pull in case you lose control of the gun while firing. Always practice with the minimum amount of ammo in the magazine (three to five rounds) and work your way up until you have gained total experience in controlling the weapon in full-automatic mode. Be a safe shooter.

Older models that don't use ported barrels and frame rails can be upgraded by using aftermarket barrels and slides like the Caspian Arms Hybrid system (ported barrel with matching slide) for Glocks. These custom parts are ideally suited for hobbyists or gunsmiths who may want to maximize the recoil control system of any Glock pistol regardless of caliber. A custom-made hybridized Glock called the Law 2000 is available from Aro-Tek complete with "Sure Touch" steel magazine release, extended slide release, and long-wearing titanium recoil spring guide—all added to further maximize the already superb handling characteristics of the Glock. This company also markets a unique laser system for the Glock pistol called Law 2000 Mk-II, a miniature device that attaches to the front of the trigger guard and that has its activator button located to the back of the grip. This superb setup is unrivaled by any other laser sighting system currently offered. Refer to Chapter 10 to contact these aftermarket accessory producers.

## CONVERTED SEMIAUTO MODEL: THE CIVILIAN ALTERNATIVE

For qualified individuals or bona fide collectors who may wish to purchase a Glock Model 18 machine pistol but cannot due to a ban on private sales, the first step is to get approval from the Bureau of Alcohol, Tobacco, and Firearms (BATF) to manufacture a machine gun. Registered machine pistols (especially prototypes) can command a very high price and are most sought after by machine gun collectors. Converted Browning Hi-Power or 1911 models will easily bring between \$4,000 and \$5,000, assuming the work is well done and that they are in excellent condition. Remember that when you decide to convert a gun to full auto, whether you or somebody else is making the parts, prior approval from the federal government must be secured. *Do it legally!* When completed and duly registered as a converted full-auto gun, your \$500 Glock may now carry a \$5,000 price tag. Not bad for a day's work.

Once you have mastered the mechanical functioning of the semi-auto Glock, transforming it to a full-auto machine pistol is not that difficult. In fact, it is one of the easiest pistols to convert to deliver rapid fire with a single pull of the trigger. This can be attributed to its ultra-simple trigger/sear and striker linkage arrangement activated by a medium-travel trigger pull (modified double action). (The Heckler & Koch VP-70 machine pistol operates in the same system, with a straight but longer trigger pull.)

The Glock has a pivoting trigger that operates on a three-stage pull principle that its inventor calls the "Safe Action" system. The first stage of the pull deactivates the built-in trigger safety—this small protruding piece at the front of the trigger prevents trigger movement until it is intentionally squeezed to fire the gun. The second part of the trigger pull (halfway) pushes the spring-loaded firing pin safety upward to clear the pathway for the striker so it can fly forward to fire the gun once the sear is tripped. The third and final stage of the trigger pull is the actual disengagement of the sear and striker.

Unique in the Glock system is that the striker is only cocked



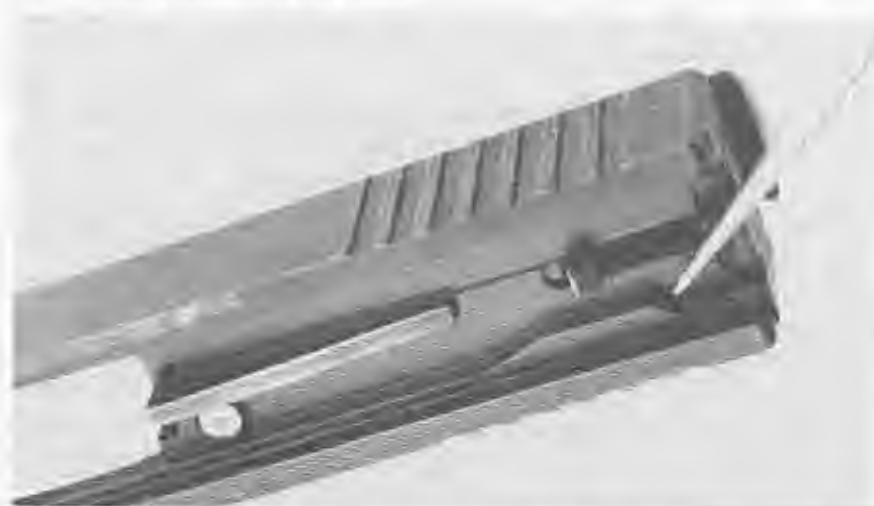
The tripping action of the Glock occurs each time the radius end of the trigger bar (pointed to by drift punch, top) hits the disconnecting shoulder of the connector (pointed to by scribe, bottom). The disconnection process between these two parts occurs at each end of the trigger pull.

halfway each time the slide is retracted to introduce a round into the chamber. Spring fatigue is kept to a bare minimum in this design since the spring is in the relaxed mode until the weapon is fired. In addition, the striker itself is locked in this position until the trigger pull reaches its second stage to deactivate the firing pin block. As the firing pin block is pushed upward to clear the pathway for the striker, the sear, which is an integral part of the trigger bar, engages the underside lug of the striker and pushes it backward as the third stage of pull starts. At the end of the pull, the trigger bar is forced downward as it hits the inclined bent below the connector, thereby causing the disengagement between the sear and striker permitting the striker to fly forward to fire the gun.

As the slide recoils after the shot, the disconnecter (the factory calls it the connector) is depressed sideways and to the left by the camming shoulder of the slide. This permits the sear to bounce back as the tail end of the bar bypasses the inclined bent of the connector (which functions as the disconnecting shoulder for the bar at the end of the pull).



The scribe points to the mechanical disconnecter of the Glock as actuated by the slide camming shoulder during recoil.



The scribe points to the camming shoulder of the slide. The slide pushes the disconnecter to the left to accomplish the mechanical disconnection between the trigger bar and connector to allow reengagement of the sear and striker after recoil.



As the slide accomplishes its rearward recoil, it ejects the empty shell. On its forward recoil, it introduces a fresh cartridge to the chamber. With the trigger pull still maintained after the shot, the sear remains fully to the rear, catching the striker underlug as the slide returns to battery holding the striker with its spring now fully compressed. As the trigger pull is released to fire the next shot, the striker moves forward halfway, but remains cocked with the sear. The spring loaded firing pin safety will automatically move downward and lock the front end of the striker, preventing it from moving.

To fire the next round in the chamber, the three-stage pull will once again come into play and the multiple safeties will be deactivated before ignition takes place. As we can clearly see here, the Glock pistol is a marvel of engineering of unsurpassed simplicity and safety. Combine these features with 21st century manufacturing technology and the end result is a revolutionary combat handgun ideally suited for rigorous military application. Gaston Glock deserves the highest credit in inventing this marvelous pistol. His trend-setting handgun has, in a very short period, accomplished what many gun inventors of the late 20th century had only dreamed of in terms of success and fortune.

## **THE SELECTIVE-FIRE CONVERSION SYSTEM: HOW IT WORKS**

Over the years, Paladin Press has published some intriguing conversion manuals for many popular weapons, such as the Ruger Mini-14, Mk I and II pistols, 1022, AR-7, Colt .45, Hi-Power, Remington 1100 shotguns, and Marlin 22 rifles, for their "Exotic Weapons" series. Most of these "how-to" manuals are still available from Paladin. The Glock machine pistol conversion manual is a great addition to this series because of the simplicity of the design and the minimal amount of work involved. The conversion design detailed in this book allows the transformation of a regular semiauto pistol into one that delivers selective-fire operation without altering the major components of the gun such as the receiver (frame) or slide. (Even the factory has to alter its slide to mount the fire selector in the Model 18 machine pistol.) It is

absolutely phenomenal that such a project can be undertaken easily using only a few tools and tiny pieces of scrap metal that no one would even bother to look at.

For amateurs working without the directions in this book, converting the semiauto Glock to a selective-fire weapon would be a difficult task. But for experienced gun designers or inventors, solving Glock's mechanical puzzle is easier than it looks. However, it is still a challenge to make a superb all-purpose combat handgun even better.

To understand and fully appreciate the amount of tinkering that went into making the selective-fire machine pistol featured in this book, you must first understand how the newly converted weapon works. Mechanically, the basic functions of the original components are virtually unchanged. The few added components operate only when the gun is fired in full-automatic mode.

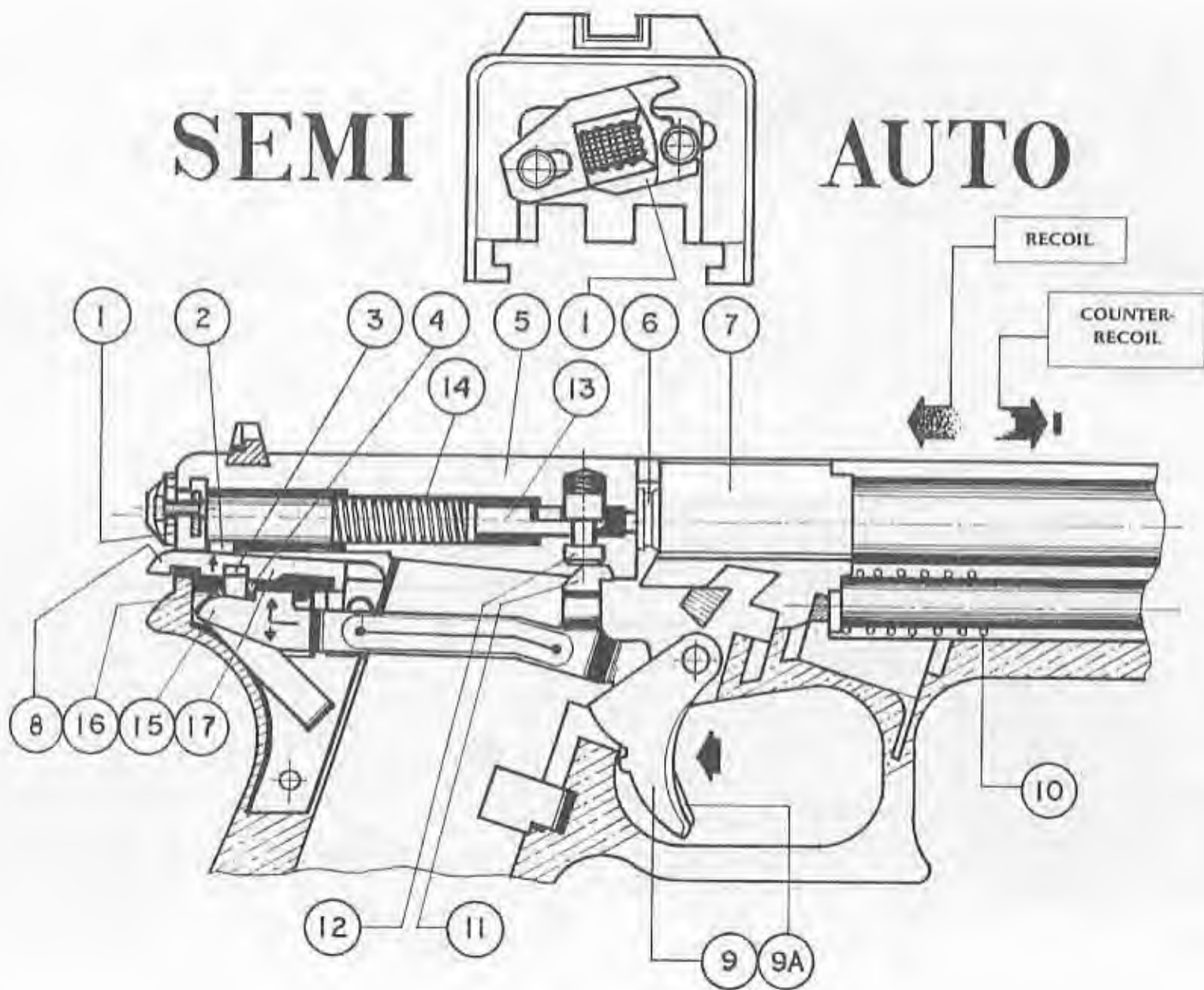
## **SEMIAUTOMATIC MODE**

To shoot the pistol in semiautomatic mode, the fire-selector lever at the rear of the slide must first be rotated upward (if the switch is on the downward full-auto position). With the shooting-hand finger off the trigger, move the fire-selector lever. First, push it to the left as far as it will go to disengage it from its index post. Now rotate the lever upward until the bottom index notch stops against the post. The built-in spring-loaded plunger will automatically lock the selector against its index post in this setting.

Now, with a loaded magazine inserted in the gun, and referring to the drawings on pp. 9 and 10, pull the slide back all the way to the rear (with your finger off the trigger) and let it fly forward to put a cartridge (6) in the chamber (7). Point the gun at your intended target and squeeze the trigger (9) to disengage its built-in safety (9A). As the trigger pivots to the rear while being pulled, the trigger bar hump (11) will push the spring-loaded firing pin safety block (12) upward to disengage its connection with the striker (13). At this point, the sear (4) will engage the striker underlug (2) and push it backward as the pull on the trigger continues. At the final stage of the pull just before it comes to a

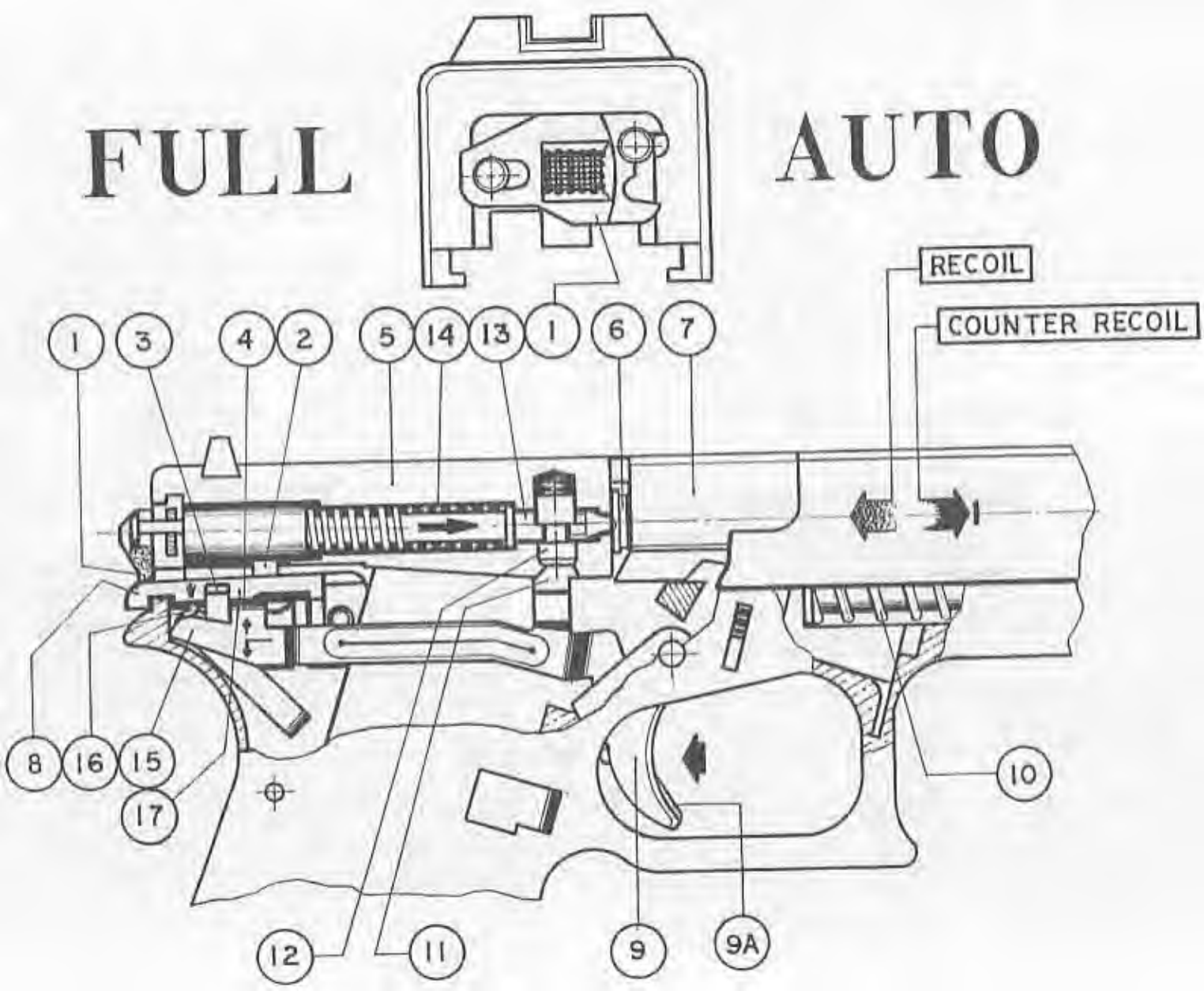
# SEMI

# AUTO



# FULL

# AUTO



full stop, the radius end tail of the trigger bar (15) will be forced downward by the camming shoulder of the disconnecter (16), resulting in the tripping action between the striker and the sear firing the gun. After the bullet has left the muzzle, the slide will recoil rearward to accomplish the extraction and ejection of the empty shell. Immediately after the recoil starts, the disconnecter (3) is pushed to the left by the camming shoulder of the slide (not shown in the illustration). As the disconnecter moves to the left as a result of the slide's recoiling action, the camming shoulder of the disconnecter also moves toward the left, allowing the end tail of the trigger bar (15) to bounce back upward. It brings along with it the automatic connector (17), which is now riding over the sear. As the automatic connector is pushed upward by the bouncing action of the trigger bar, its rear end tail (8) will pivot upward slightly and automatically position itself so it is ready to be activated by the fire-selector tripping shoulder (1). (This only occurs if the fire selector is set at full-auto mode.)

At the end of the slide's rearward travel, the recoil spring (10) will power the slide to return back to its battery position. As the slide starts to move forward with the trigger pull still maintained, the sear (now back to its upward rearmost position) will catch the striker underlug, holding the striker with its spring (14) fully compressed (cocked position) while the slide continues to move forward to complete the cycle of the action. Since the tripping shoulder of the fire-selector lever did not make contact with the automatic connector's rear end tail, full-automatic firing was avoided.

To fire the next shot, the pull on the trigger must first be released to allow the trigger group to return to its normal position. The above sequence of operation will be repeated as fast as the trigger can be pulled and released by the operator. The slide will be locked open by the slide stop after the last round has been fired.

### FULL-AUTOMATIC MODE

Before moving the fire selector to any position, always make sure that your shooting finger is off the trigger. To fire the pistol in full auto-



Left-side view of the newly converted Model 21. The only external difference from the original semiauto format is the fire selector mounted at the back of the slide.



Left-side rear perspective view of the same pistol. No matter how you look at it, this Glock 21 is pretty awesome.



matic, move the fire-selector lever to its downward position. Push the selector to the left as far as it will go, then push it down until it stops with its notch locking up with the index post. Now the pistol is set to fire full-automatic.

Assuming that a loaded magazine is already in place, with your finger off the trigger, pull the slide all the way to the rear and let it snap forward to introduce a round to the chamber.

Point the gun at your intended target and squeeze the trigger to fire the pistol. After firing the first shot, the slide will recoil rearward to eject the empty shell. At the first stage of the recoil, the disconnecter will be forced to move sideways by the slide camming shoulder (not seen in illustration) allowing the end tail of the trigger bar to bounce upward to catch the striker underlug as the slide starts to move forward after completing its recoil. With the trigger pull maintained after the shot, the trigger bar remains at the rear. The sear (crucifix) at this point has moved upward and is ready to engage the striker underlug as the slide moves forward. (Note: The striker will be held in the fully cocked position with its spring (14) fully compressed only if the trigger pull is maintained after firing a shot.) When the sear bounces upward after the disconnecting process is completed, it pushes up against the automatic connector. As a result of this action, the tail-end portion of the auto connector will pivot slightly upward, ready to engage the fire selector's tripping shoulder as the slide completes its full forward closure.

As the slide continues its recoil, it will chamber the next round from the magazine and will lock with the barrel at the end of the cycle. Just before the slide reaches its full forward stop (.050-.065 inch) the tripping shoulder of the fire selector will start to depress the radiused rear end tip of the auto connector. As the slide comes to a full forward stop, the sear is now fully depressed by the lower step of the automatic connector, resulting in the release of the fully cocked striker to detonate the chambered round. This cycle of operation will continue as long as the

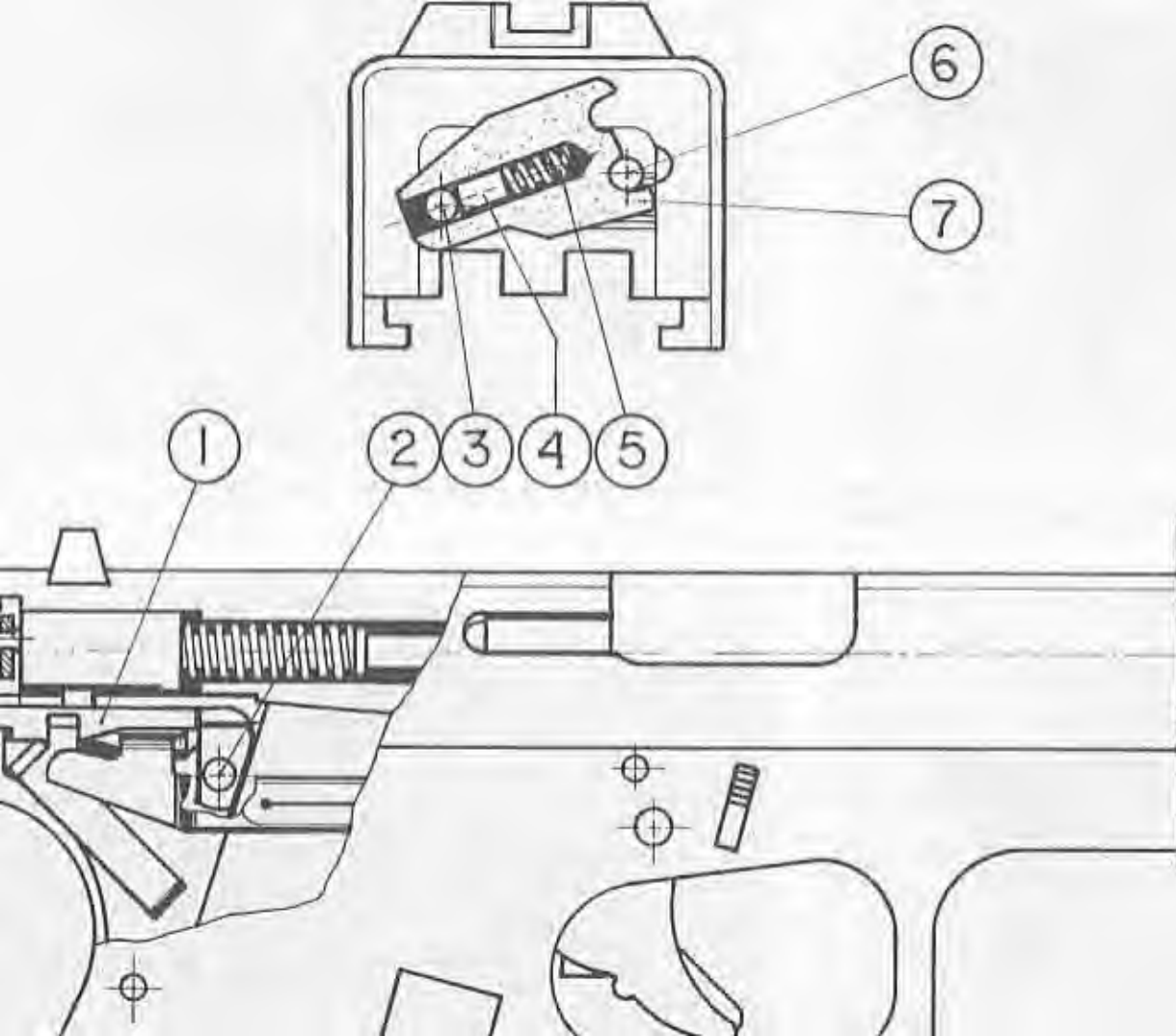
trigger pull is maintained or until the magazine is empty. The slide will be held open by the slide stop after the last round has been fired.

**CAUTION:** As with other selective-fire weapons (e.g. M2 .30-caliber carbine, M16, H&K G3, H&K MP5, FAL, AK-47, Beretta 93R, Glock Model 18), never pull on the trigger while moving the fire-selector mechanism, because this may cause an accidental discharge. The end tail of the auto connector protrudes at the back of the frame just below the fire-selector lever. If the striker is in a fully cocked position after a shot is fired and the trigger pull is not released, the automatic connector will be riding over the sear. Moving the fire selector to full auto setting at this point without releasing the pull on the trigger will push down the tail of the auto connector, which will in turn depress the sear and trip the fully cocked striker and cause the gun to fire unintentionally. Be careful! Make certain your finger is off the trigger each time you reload the pistol and each time you change the fire-selector setting.

## NOTES ON FULL-AUTO CONVERSION PARTS

Once completed, the conversion parts will fit any Glock pistol. The only parts that are not interchangeable are the trigger bars and ejectors/trigger mechanism housings. The .45 ACP and 10mm models use larger bars and different ejectors due to their cartridges' being longer than those of the 9mm, .40 S&W, and .357 SIG. The trigger bars of these smaller pistols also will not fit in the larger frame guns. However, you can purchase a spare trigger assembly (short or long) and ejector to complete your conversion kit, allowing it to function with any caliber or model you may wish to use or convert.

Having readily interchangeable components makes for a very versatile system, allowing the user who has a variety of Glock pistols to use one basic conversion kit. What else could be better or simpler?



# **NUMERICAL TABLE OF CONVERSION PARTS**

1. Automatic connector: ordnance steel.
  2. Auto connector pivot pin: drill-rod material.
  3. Fire selector pivot pin: mild-steel rod (to be riveted)
  4. Index plunger: drill rod material (mild-steel usable)
  5. Plunger spring: Ruger 1022 rifle firing pin retraction spring (available from Ruger Firearms or gun shops)
  6. Fire-selector index: mild-steel rod (to be riveted)
  7. Fire selector; mild-steel plate (case-hardening optional)
- Note: Modified factory parts not labeled in the drawing.



converted Glock with its slide locked open. This action will occur after the last round has been fired or the slide has been manually locked open for bore checking or cleaning.



Fieldstripped view of the newly converted Glock pistol.





Close-up view showing the fire selector in semiauto (upward) position. The trip-shoulder of the selector is raised to avoid contact with the automatic connector.



Close-up right-side view of the fire selector in semiauto position. Note the radiused end tail of the automatic connector protruding just below the selector.



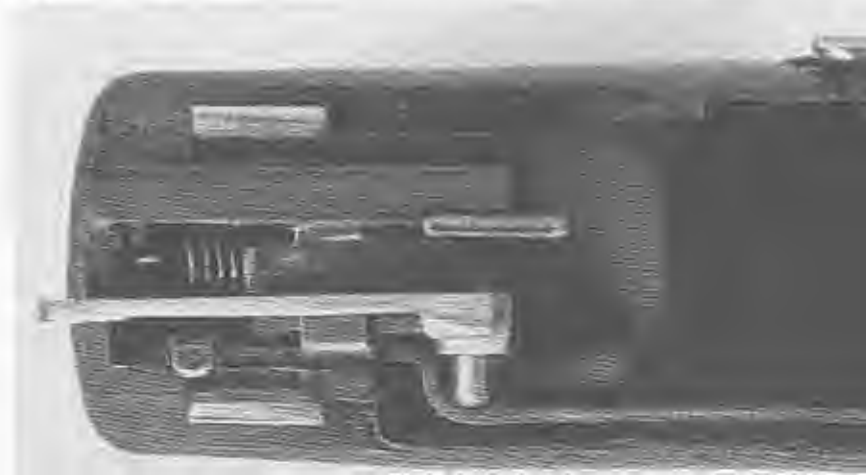




... ensure safe and reliable functioning in full-auto mode, the tripping shoulder of the fire selector must only start to make contact with the radiused end tip of the automatic connector at the very last stage of slide closing (.050 to .065 inch). The trigger will be tripped as the slide reaches its full forward stop.

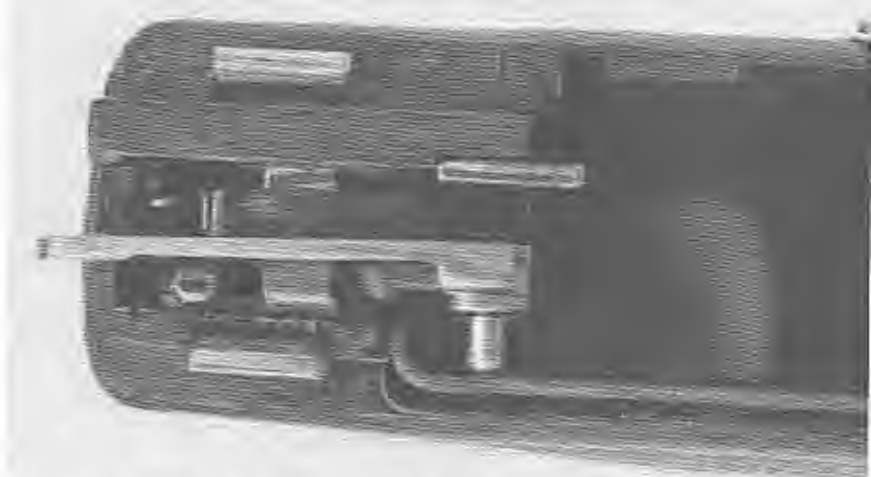


View showing the rear of the ejector at the top of the grip frame. The automatic connector (seen on the right side) must be parallel in elevation before the tripping action of the sear in full auto takes place (shot fired, trigger pull maintained). When fully depressed by the fire selector, the rear end of the automatic connector will move approximately .055 to .060-inch downward to accomplish its tripping action.





up view showing the sear moved all the way to the rear at the end of the trigger pull firing the first shot. The sear must not make any contact with the automatic connector at this point, leaving the connector in its normal downward position.



After the shot is fired, the slide camming shoulder will force the disconnecter to move to the left (seen here almost touching the side of the automatic connector) permitting the trigger bar/sear to bounce back upward to reengage the striker.



# The Automatic Connector System

The automatic connector is the heart of the conversion process. It acts as a bridge between the fire selector and sear. The connection between the sear and selector occurs only when the trigger is pulled and the gun is set in full-auto mode. Ordnance steel must be used when building this part. Its elongated portion is only .060-inch thick. The part must be tempered after final fitting and polishing is done.

The automatic connector is one of the two main ingredients in the conversion group, the other being the fire-selector lever. All other parts are nothing more than pieces of small rods for riveting and the spring-loaded index plunger. The small spring to power the plunger is commercially made and available from Ruger Firearms. This conversion process is as simple as it will ever get.

The auto connector used in this project is completely handmade using only a hacksaw to cut the part in rough shape, a small flat file to form the part to its final shape, and assorted grit paper for final polishing. The hole for the pivot pin is drilled after polishing. Ready for final fitting, the part can now be assembled to the trigger mechanism housing. This part must be heat-treated after the final fitting is done; filing the metal (if additional adjustment is required) is easier to do while it is still soft.

If you look at the completed part carefully you will notice that the front end of it has an open square pattern to act as a saddle to ride over

the right-side front end wall of the trigger mechanism housing. The left leg of the automatic connector slides into the front notches of the housing during assembly. Still looking at the front top end of the connector, you will see a step to the right just above the right leg. This step is needed to clear the pathway for the slide camming shoulder (the long elongated shoulder at the right-side rear of the slide, opposite the striker underlug), whose sole function is to separate the disconnecter and trigger bar during recoil.

During final fitting pay particular attention to this step, especially if the slide is tight when drawn to the rear. If you see heavy rub marks in this area, polish them off so that the slide will cycle normally. If there is not enough clearance in this step, the slide will force the automatic connector to move to the left when the slide is drawn to the rear. If this happens, the inner side of the connector will butt against the striker underlug and restrict its movement, causing a misfire and tight slide travel as well as tightness in the movement of the sear. If the connector is pushed sideways due to lack of clearance for the slide camming shoulder, the plastic part will move and tighten everything inside the housing. Pay particular attention in these two areas if you encounter the above problems and make the necessary adjustment to ensure that all parts work properly.



Bottom-perspective view of the first prototype automatic connector. Good-quality steel is required in building this part since its elongated portion is only .060-inch thick.



This is the improved and final configuration of the automatic connector with a much wider rear end tail (radiused) to prevent the fire selector from snagging on the automatic connector during contact.



Front perspective of the same prototype part. The narrow rear end tail of the part tends to catch occasionally against the tripping shoulder of the fire selector during full-auto firing. The redesigned and improved automatic connector has corrected the problem.



Left-side view of the improved connector. The pivot pin is seen beside it.



Looking below the middle part of the automatic connector, you will also notice three step cuts. Just past the front section (saddle) the first step is narrow. This high cut is basically a clearance to permit uninterrupted travel of the sear when the trigger is pulled from its normal starting position. No part of the sear should touch this clearance portion of the connector while sliding below it as the trigger is pulled. The automatic connector must remain in its normal (downward) position till the end of the trigger pull is reached.

Past the narrow section is an inclined shoulder. This angle corresponds with the downward action of the trigger bar as it starts its disconnecting process with the connector bent. Make sure that the incline angle has enough clearance for the sear to move freely below it so the incline angle will not interfere with the original functioning of the gun when the trigger is pulled from starting point to its end of travel.

The next portion past the incline shoulder is wider. This section of the connector is the actual contact point that will ride over the sear each time the gun is fired and mechanically disconnects immediately after recoil. Normally, the automatic connector remains in its downward position until it is pushed upward by the sear bouncing after the recoil and while the trigger pull is still in effect. As the sear pushes the connector upward, its tail end will rise ready to engage the tripping shoulder of the fire selector if the weapon is set to fire full auto. If the selector is set for semiauto, the tripping action is avoided and the operator has to release and repull the trigger to fire the next round.

Just before the end tail of the automatic connector, a square notch has been cut. This is basically to clear the back-end shoulder of the frame where the notch is aligned. The notch allows the connector to move fully to its downward position during the tripping process.

Last but not least is the end tail of the part. Notice that the end tail has a circular shape. The upper half of the circular shape is the actual contact area of the part to hit the tripping shoulder of the fire-selector mechanism during slide closing. This is another critical portion of the automatic connector that may require careful fitting to ensure proper timing in the release of the striker during full-auto operation.

If the striker is tripping early, before the slide comes to a full stop, you can trim a little bit from the top of the radius to delay the release of the striker until it is timed properly to the full closure of the slide with the barrel. If you need to trim the circular shoulder from the top to correct the timing of striker release, file the contact area gradually to avoid overcutting. You may also trim the tripping shoulder of the fire-selector lever in place of the automatic connector until the timing of the striker release is perfected. Once again, "file and try" is the key to success here. Do not rush it. If you overfile, you will have to build a replacement. I don't have to tell you how frustrating that could be.

## FUNCTIONING OF THE AUTOMATIC CONNECTOR

To fully understand the primary function of the automatic connector during the firing cycle of the pistol, refer to the following illustrations.

If the fire selector is set in the semiauto position, it will not engage the raised rear end tail of the automatic connector, and will thus result in normal semiauto operation.

## BUILDING THE AUTOMATIC CONNECTOR WITH A HACKSAW AND FILE

Before lathes and milling machines were invented, primitive versions of the modern hacksaw and file were the most common tools in weapon manufacture. The automatic connector and the fire selector can be built quite easily using the same tools and same basic principles employed by the early gunsmiths. First, the part to be built is cut in rough format with a hacksaw, then finished with a set of files. The accompanying diagram shows the simple step-by-step construction using a hacksaw and file to create this part. Good-quality steel (preferably 4140) is required here so that it can be heat-treated after final fitting. Refer to the working drawing for the dimension specification of this component.

## BUILDING THE AUTO CONNECTOR WITH A HACKSAW AND FILE

### STEP A.

1. Scribe to the metal the actual shape and dimension of the part. Use a Prussian blue or felt metal marker to color the metal before scribing the shape of the part to the material.

### STEP B.

2. After scribing the format of the part to the metal, drill the pivot hole of the part.
3. Cut the metal into rough shape with the hacksaw as indicated by numbers 3, 4, and 5 in the drawing on p. 23.  
Important: If you cut directly to the actual line of the diagram, the part will turn out undersized by the time you clean up the hacksaw marks. Cut the part outside the lines so that it is a little oversized.

### STEP C.

6. Cut the extended thinner portion of the part. (View is as seen from the top.)

### STEP D.

7. With a small file, work the various shaded areas that need to be shaped to their final configuration.

### STEP E.

7. With a small file, work the various shaded areas that need to be shaped to their final configuration.

### STEP F.

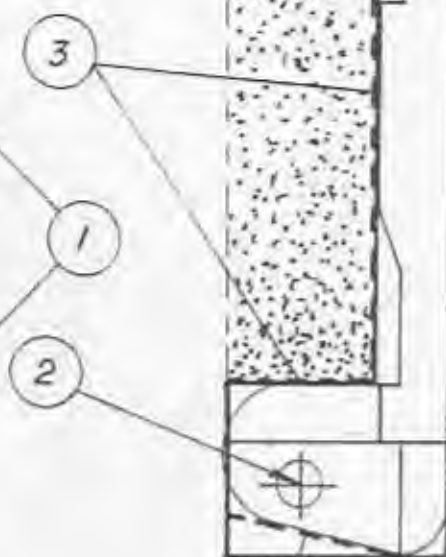
8. File this step (shaded area) to final specs.
9. Install two hacksaw blades in the handle to cut this vertical notch. Finish the rough cut with a small (3/32-inch-thick) flat file. Use this same file to trim the trigger bar sear.

### STEP G.

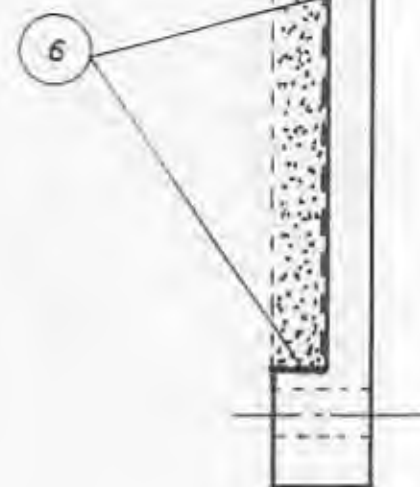
This is the completed automatic connector ready for final fitting and polishing. For best results, polish all external surfaces after the final fitting. Temper the metal accordingly.



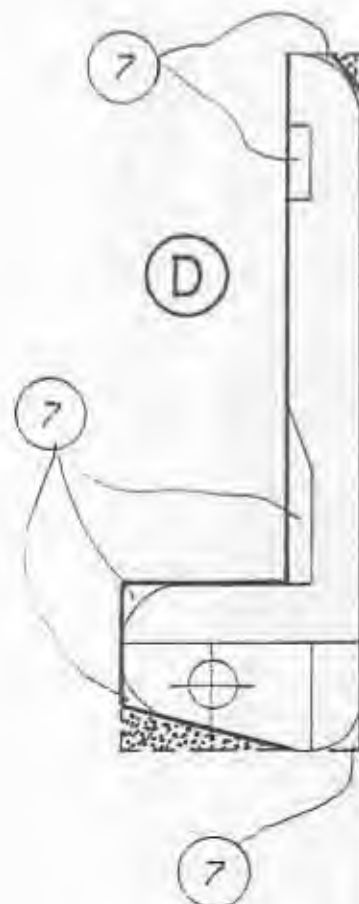
(A)



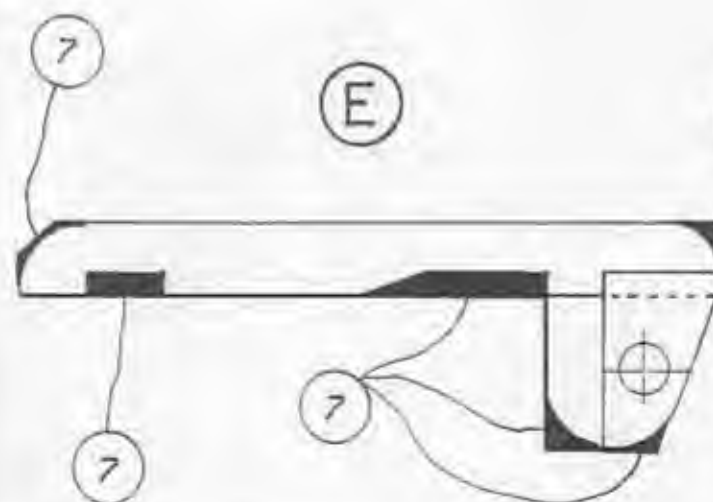
(B)



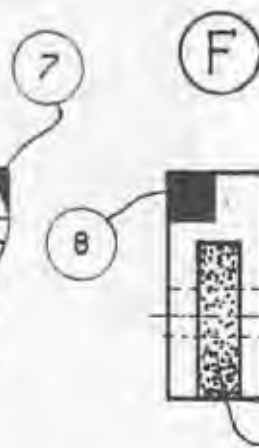
(C)



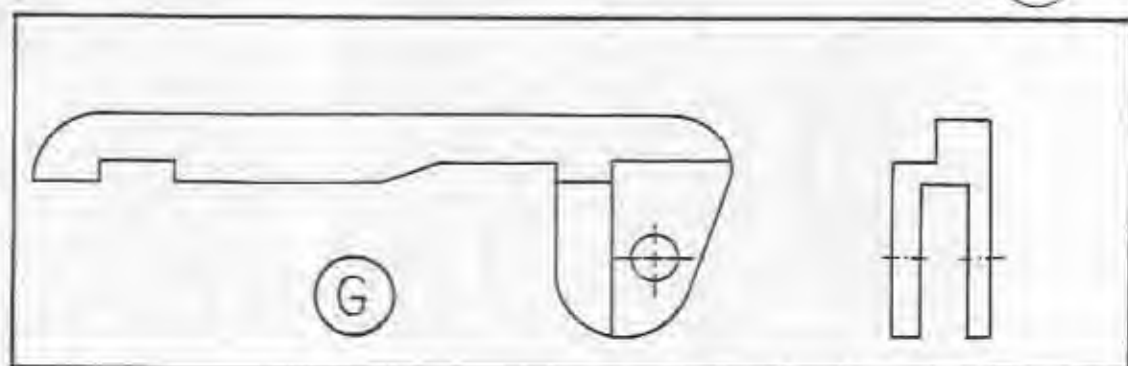
(D)



(E)



(F)

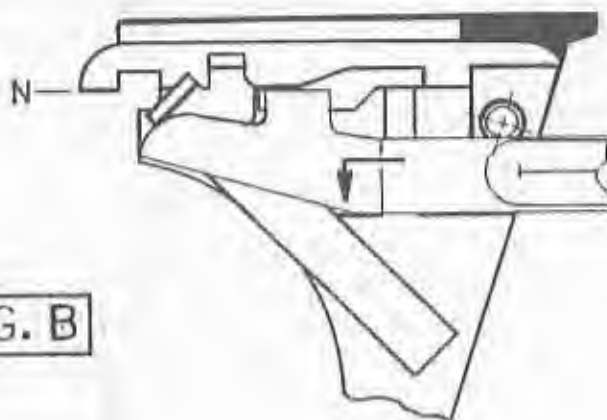


(G)

## FUNCTIONING OF THE AUTOMATIC CONNECTOR

**FIGURE A**

The illustration shows the trigger mechanism of the converted pistol with the parts in their normal order prior to pulling the trigger to fire the gun.



**FIG. B**

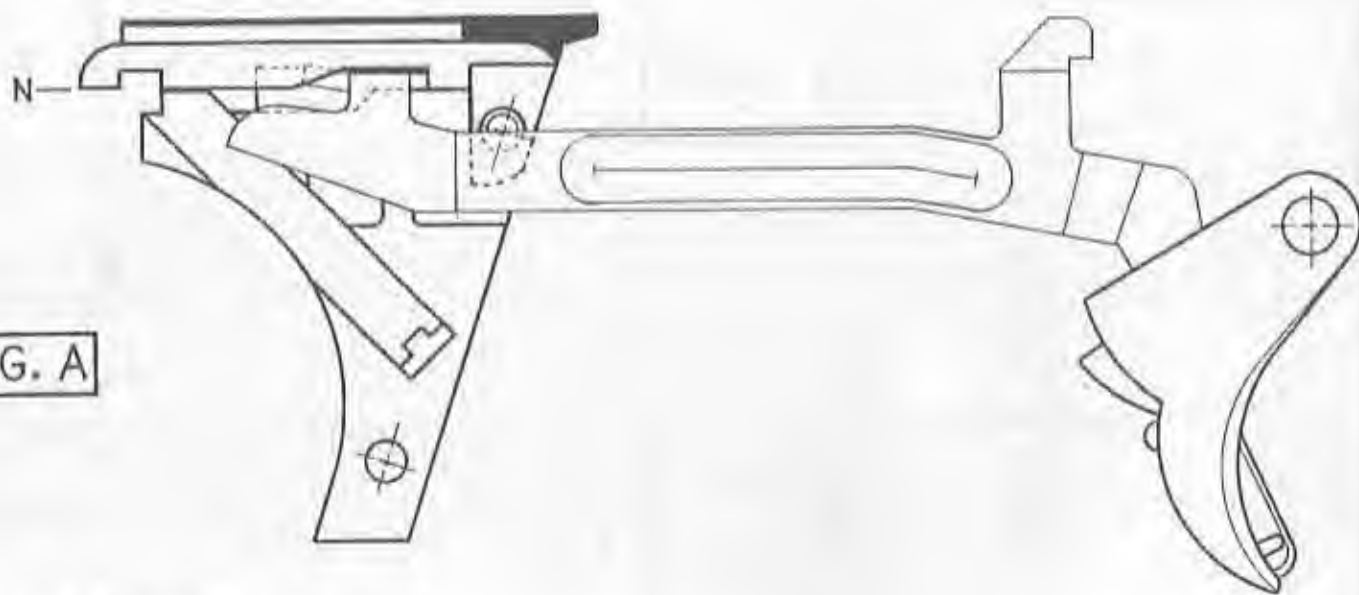
**FIGURE B**

This sequence shows the end of the trigger pull, after the pistol has fired the first round, with the trigger bar in its full downward position. The automatic connector remains in its normal (downward) position.

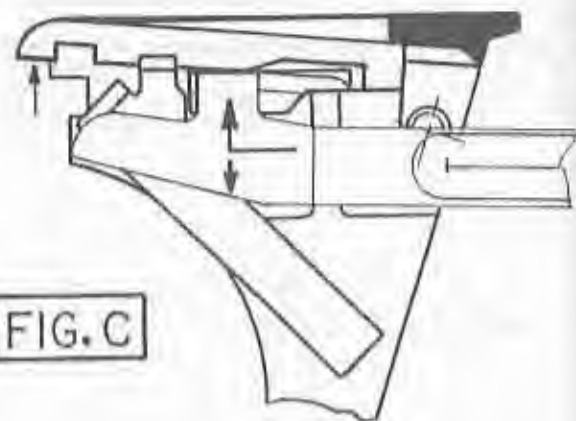
**FIGURE C**

This sequence shows the trigger bar bouncing upward to catch the striker after recoil. The upper section (crucifix) of the trigger bar (which functions as the sear) pushes the automatic connector upward as the bar disconnects from the factory connector tripping shoulder. In this position, the connector is set to engage the fire selector during the final stage of slide closure during full-auto operation.

**FIG. A**



**FIG. C**



N = Normal Position

N - NORMAL POSITION



## Chapter 3

# The Fire Selector Group

The conversion technique incorporates a simple yet highly functional fire-selector mechanism that allows the operator to shoot the gun in semiauto mode to conserve ammunition or in full automatic in extreme situations where volume of fire becomes a priority.



The fully assembled fire-selector mechanism seen mounted to the back of the slide cover plate.

The selector is moved from one index to the other by the non-shooting hand. With the pistol held by the shooting hand (finger off the trigger, weapon pointed in a safe direction), the thumb of the nonshooting hand will move the selector, pushing it to the left as far



The fire-selector group prior to riveting with the factory slide cover plate. The left-side rivet also acts as a pivot for the fire selector. The index plunger is powered by the Ruger 1022 firing pin retracting spring (purchased).

as it will go to disengage it from its locked position. Assuming that the device is set at semiauto (upward position) and that the operator wants to change the setting to full auto, the selector is pushed to the left until its index shoulder is cleared, moved downward until it stops, and let go. The spring-loaded plunger inside the selector automatically locks the device against the index post to deliver the type of fire selected. Reverse the procedure when changing the fire-selector setting to semiautomatic.

The fire-selector group consists of a lever (main body), and two rivets; the left rivet acts as a pivot, the right rivet functions as an index post. The heads of both rivets prevent upward movement of the lever after assembly. This ensures the lever's rigid seating with the slide cover plate after the riveting process. Locking the lever into position is a small spring-loaded plunger powered by a Ruger 1022 rifle firing-pin retraction spring. This ready-made spring is easily obtainable direct from Ruger or any gunsmith supplier or gun dealer selling Ruger products. If you wish to buy this part from Ruger, it is part A2000. It only costs 50 cents, which is a lot cheaper and easier than trying to make one from scratch. Be sure to mention that it's for a 1022 when ordering the part from the factory.

The fire-selector lever is constructed from 11/64-inch-thick mild-steel plate. A 3/16-inch-thick plate is usable, but this is the maximum thickness you could use. Preferably, the fire selector mounted at the back plate will have the least amount of bulk to maintain the streamlined look of the pistol. Checkering or serrating the top hump of the lever will provide nonslip operation when moving the part from one index to the other. Checkering also enhances its aesthetics. Although it is not necessary to harden this part, its long-wearing capability will be improved if this is done. Also, the tripping action is smoother when hardened metals glide together, being almost friction free. Case-hardening is the only treatment that hardens the surface of mild steel. It will, however, remain soft inside. While mild steel will work fine for this piece, you may build it with the stronger ordnance steel if you choose.

The left side of the lever is drilled to accommodate the spring-loaded plunger. In addition, a small, elongated slot is cut to the top left

side just above the drilled hole for the plunger. The elongated slot will permit side-to-side movement of the selector to allow it to clear the shoulder between indexes while rotating the fire selector.

The oblong slot can be elongated using a round needle file after drilling a starting hole. The slot must be long enough to permit the selector to move to the left and clear the shoulder between indexes. The width of the slot must not exceed .005 inch of the diameter of the pivot pin (left-side rivet) to minimize vertical play. Elongate the slot gradually by the "file and try" method. Do not overcut, because this may not restrain the plunger when assembled into the hole inside the lever. If you feel you are about to overcut the length of the oblong slot, you may reduce the shoulder between indexes to compensate and allow rotation of the selector. Use a temporary pivot pin while adjusting the length of the travel slot.

The index notches can be cut using the same needle file.

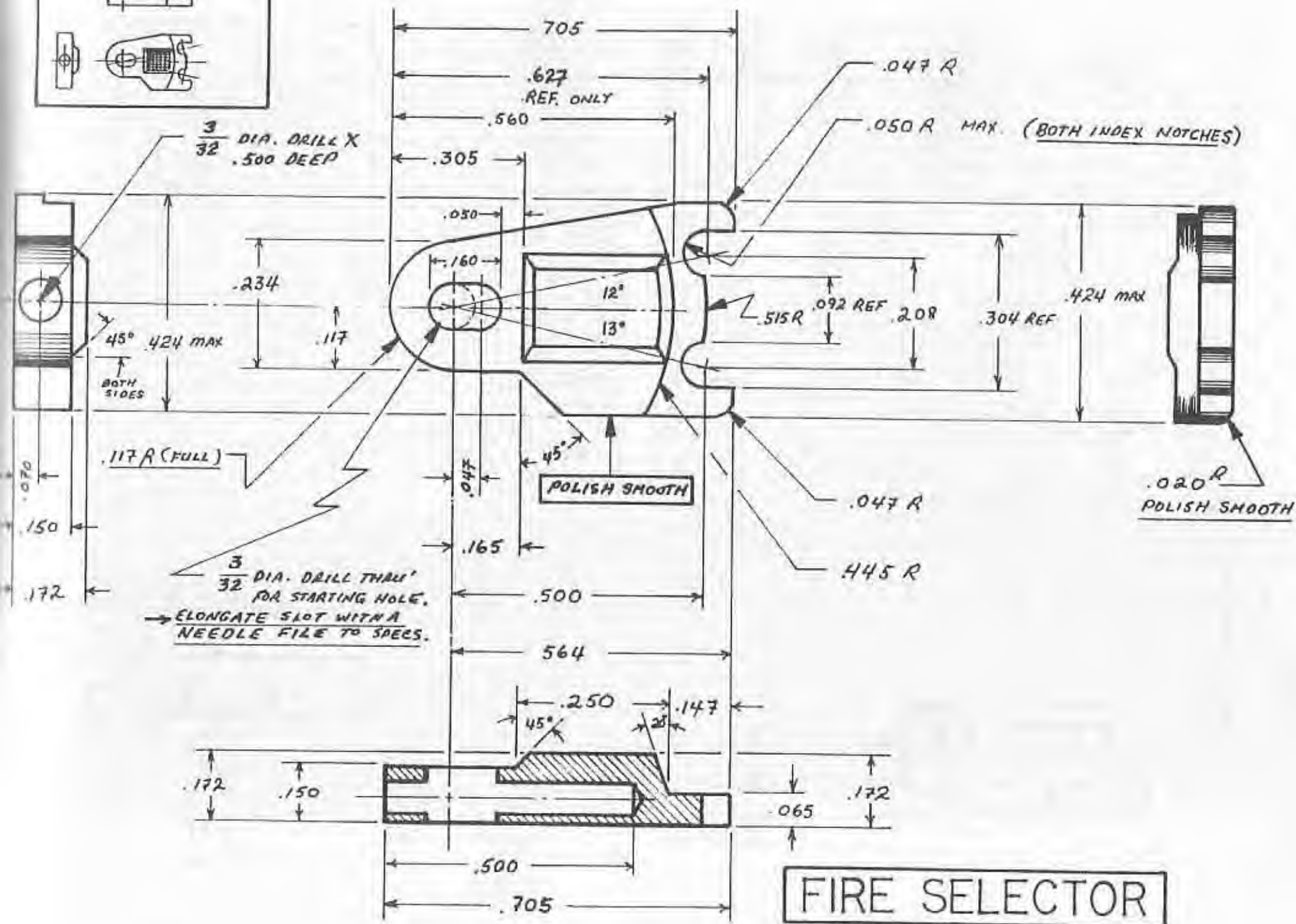
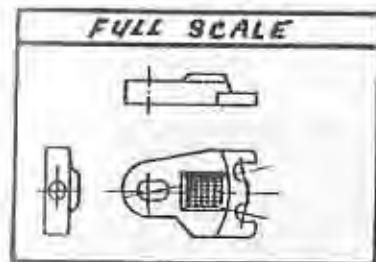
Care must be taken when cutting the half-round index notches. These notches must not exceed the diameter of the index post (right-side rivet) by more than .003 inch max. The tighter the engagement the better.

The dual rivets used to connect the selector to the slide cover plate were made from 9/64-inch-diameter mild-steel rods turned down to two step diameters. A 3/32-inch-diameter nail with 9/64-inch-diameter head will do the job just fine. The spring-loaded plunger is made from 3/32-inch-diameter drill rod. However, mild steel is usable.

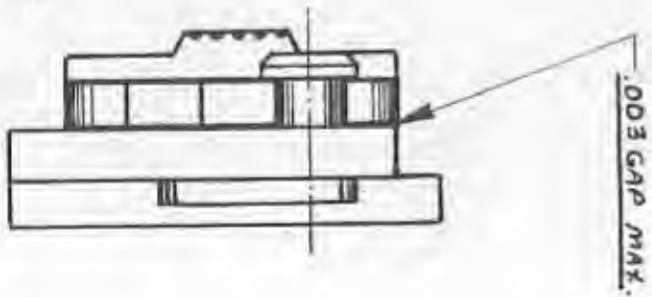
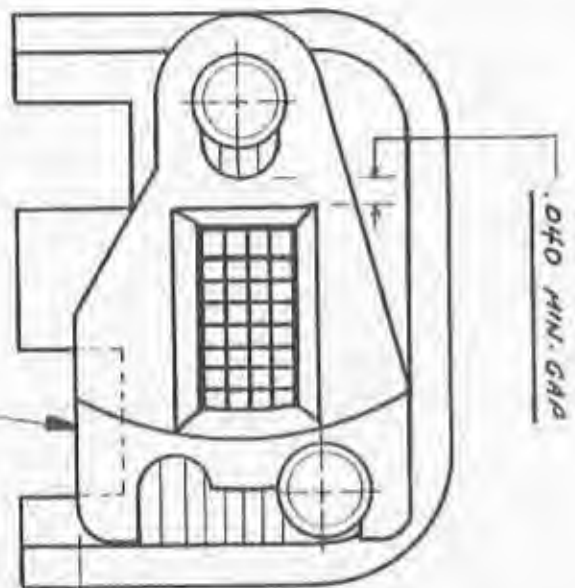
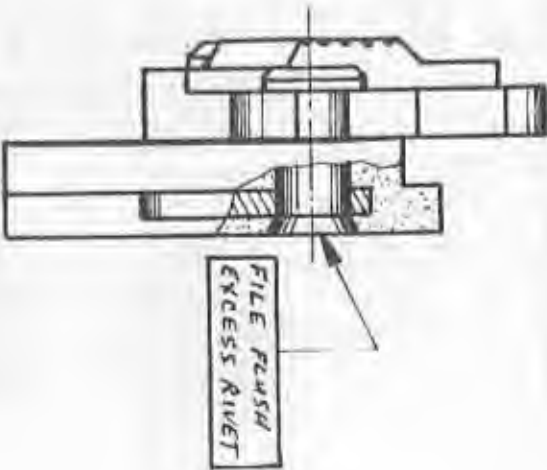
## MOUNTING THE FIRE SELECTOR TO THE SLIDE BACK PLATE

Mounting the fire-selector assembly to the slide back plate is a little bit tricky and requires a bit of preparation. You will need a slave pin (same diameter as the rivet) about an inch long. A nail with its head removed of the same diameter as the rivet will do just fine.

Before mounting the preassembled fire-selector mechanism to the back plate, make sure that the spring-loaded plunger is inserted in place. Your slave pin will temporarily restrain the spring-loaded plunger inside



# FINAL FITTING FIRE SELECTOR GROUP



SUBJECT FOR FITTING

its assembly hole via the oblong slot. To assemble the slave pin to the oblong slot (to restrain the spring-loaded plunger), first lay the selector (hump facing up) flat on a table. Push the spring-loaded plunger inside its assembly hole as far as it will go, bypassing the oblong slot using a small rod or nail. Now pick up your slave pin and position it to the left corner of the oblong slot, placing it over the rod that is pushing the spring-loaded plunger. Now push down the slave pin while at the same time pulling out the rod restraining the spring-loaded plunger. The slave pin should capture the spring-loaded plunger as it moves down the elongated slot while connecting the two parts together. Now slowly push down the protruding top end of the slave pin until it comes level with the top surface of the slotted part. Place the selector over the slide back plate and insert the protruding portion of the slave pin into its assembly hole (left side) in the plate and tap the pin slowly from the top until the two parts meet and join. Now, insert the other rivet in its designated hole in the back plate while lining it up with one of the selector index notches. Once the index notch is aligned to the slide back plate hole (right side), insert the index post rivet and tap it gently until it joins the two main parts together with its head seated flush with the top of the selector index.

Now the slave pin must be replaced by the left-side rivet.

The lower part of the slave pin will protrude past the bottom of the slide back plate after it was assembled temporarily to join the selector and back plate group. The protruding end of the slave pin can be positioned between the vise jaws while the slide cover plate is laid flat over

it and the selector rests on top of it. Now position the bottom end of the rivet over the top end of the slave pin and quickly tap it to push down the slave pin so the rivet will take its place. Place a small cloth on the left side of the selector to catch the spring-loaded plunger in case you miss the transformation, otherwise you will lose the part and may have to build another set. Be very careful in this stage of assembly.

Now that you have both rivets in position after joining the two major parts of the selector group, flaring the bottom ends of the rivets is your next step. Make sure that the bottom of the hole in the back plate—where riveting is to be done—has been countersunk lightly to accommodate the flaring of the pin.

To flare the bottom end of the rivet, you will need a dulled center punch and an aluminum or brass plate on which to rest the rivet head during the flaring process. Mild steel will do fine if no softer metal can be found to support the part while it is worked on.

With the parts to be riveted placed upside down, rest the head of the rivet on the metal plate and gently tap the center of the rivet pin using the point of the dulled center punch until the tip of the rivet opens up. Do this for the other rivet. It is important to flare the rivets gradually and alternately, constantly checking the tightness of the selector movement as you go along. The connection must be rigid, but loose enough to allow the fire selector to move from one index to the other. After the rivet process is completed, check to make sure that the excess metal above the plastic part is filed off so that the part can be inserted freely into its seat at the back of the slide during reassembly.



# Trigger Mechanism Housing Modification

The Glock pistol features a removable trigger housing made of composite (plastic) material. The ejector is molded right into the housing for a permanent assembly. The extension-type spring that powers the trigger bar is connected to the housing as well as the front bent portion of the sear. A thin springlike piece of stamped sheet metal that the factory calls a connector is assembled on the right-hand side of the part. The top bent part functions as the disconnecter and is mechanically actuated by the slide during recoil. A second bent below the disconnecter is the actual connector. I call this second bent the disconnecting shoulder for the trigger bar. In reality, the very few parts of the Glock pistol do multiple functions, so anyone can come up with his own definitions or descriptions.

Looking at the left side of the housing, you will notice a two-step slot just behind the ejector. The left arm of the sear is inserted into this opening during assembly. The notch controls the fore-and-aft movement of the sear/trigger bar as well as its downward stroke at the end of the trigger pull. In addition, the long slot also limits the upward motion of the sear during the disconnecting process as activated by the slide recoil.

The automatic connector is mounted to the front end corner on the right-side wall of the housing. To install the automatic connector on this part, two minor modifications will be required. One will be an assembly hole (5/64-inch diameter) to be drilled to the right-side wall for the

connector's pivot pin. The other is a long narrow notch at the front of the housing just beside the right-side wall itself, which allows the square saddle of the auto connector to seat over it during assembly. A hacksaw is all that is needed to cut the narrow notch at the front of the housing. Care must be taken when cutting the notch so you don't over-cut. Plastic is soft and easily cut by a hacksaw; do not apply excessive pressure while cutting. Cut gently with a fine-toothed hacksaw and then use a small flat file to dress up the notch.

**IMPORTANT:** The location of the hole for the automatic connector pivot pin is critical here. Ensure that it is drilled precisely as specified in the drawing. You only have to drill the right-side wall of the housing where the new part is going to be installed. The reason the location of the hole in this part is critical is that the protruding end of the automatic connector pivot pin restricts the forward movement of the trigger bar. If you drill the hole farther to the back, the bar will not move far enough forward to allow its built-in trigger safety block to pop out inside the trigger guard. If this happens, you have created an unsafe gun. The trigger safety must not be compromised, since it also controls the position of the trigger hump that activates the firing pin safety. If your trigger is slightly in, the hump on the trigger may also be lining up with the firing pin safety and actually pushing it up. If the striker is acci-



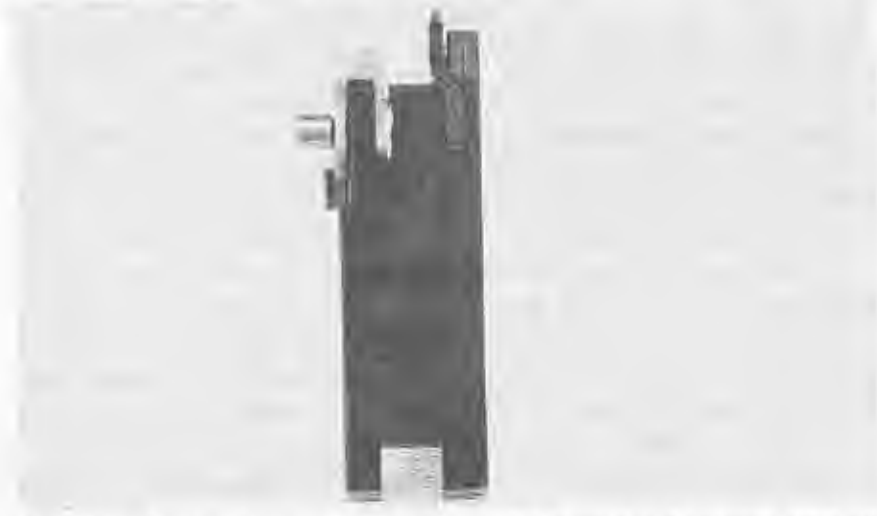
Photo of the trigger-mechanism housing prior to modification to accommodate the automatic connector assembly.



The same factory part after the modification is done. The pivot hole for the automatic connector is seen at the front uppermost corner of the housing. The hole is drilled only to the right-side wall of the part.



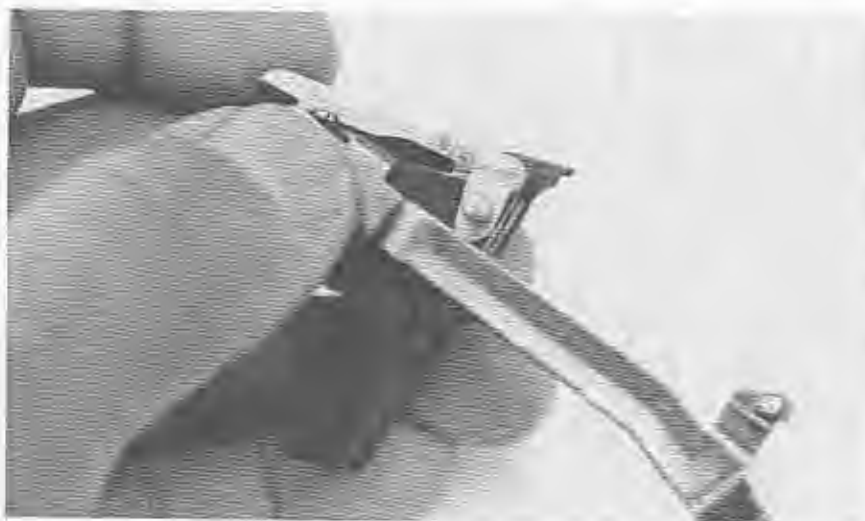
Front view of the trigger mechanism housing showing the narrow notch cut beside the right-side wall. The notch will accommodate the inner leg of the automatic connector during assembly.



Front view showing the auto connector's inner leg inserted to the narrow notch cut in the front of the housing as the automatic connector rides over the wall of the housing. The pivot pin is also seen assembled in place.



Front perspective view of the automatic connector fully seated and assembled to the factory trigger mechanism housing.



The automatic connector can only be seated into position after the trigger bar has been fully assembled into the housing. Restrain the trigger bar against the housing (as shown) before assembling the connector into the housing.

dentally released at this stage, the gun will accidentally discharge. Make sure that the trigger returns forward and allows the built-in trigger safety block to come out automatically when the trigger pull is released.

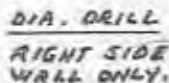
Finally, if you move the hole farther to the front than is specified in the drawing, the front of the hole will be on the thin side. Although Gaston Glock's polymer has proven to be tough and durable, it is more comforting if we keep everything sturdy.

**NOTE:** While the Glock's polymer material is one of the most durable plastic compounds available, it is also elastic. Therefore, there is a possibility that the pivot hole drilled for the automatic connector assembly in the housing may eventually become elongated and affect the tripping action of the part. It may take a while before the gun stops working in full auto due to the change in the hole's dimension. As the hole elongates, there will come a time when the gun will no longer empty with one steady pull on the trigger. It may eventually fire shorter bursts (three to four rounds) even while the trigger is pulled to fire a long burst in full auto. The gun will give you ample warning when it's time to change the trigger housing, firing double or single shots alternately when the selector is set to full-auto mode. The semiauto function will remain unaffected.

If you intend to shoot the pistol a lot in full auto, it is best to order at least five spare trigger mechanism housings predrilled and slotted to the front, ready to take the automatic connector as the other parts cease operating. The housings are only \$2 each or less. Your five spares are more than enough to keep you going until the gun retires by itself. Remember, the automatic connector only goes to work when the gun is set at full auto. Furthermore, the sear will only have to move .055-inch downward with little pressure<sup>1</sup> to release the striker when the gun is firing, amounting to minimal strain on the conversion parts. The automatic connector remains nonfunctional in semiauto mode. Therefore, stress on the part and its assembly hole to the trigger housing is kept to a bare minimum.

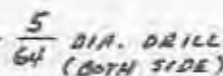
1 This refers to pistols not equipped with a New York trigger spring. The New York springs are normally installed in NYPD service pistols to provide heavier trigger pull, presumably to minimize accidental discharge. This spring will cause heavy strain in the automatic connector as well as difficulty in the tripping action between the fire selector and the connector end tail if this type of spring is used on the gun being converted. If your pistol is equipped with New York trigger spring and you wanted to convert it, replace it with a regular (standard) spring.

## MODIFICATION



SLOTTED TO CLEAR THE  
LEFT SIDE OF THE  
AUTO. CONNECTOR SADDLE

*FULL SCALE*



FULL SCALE

## AUTOMATIC CONNECTOR

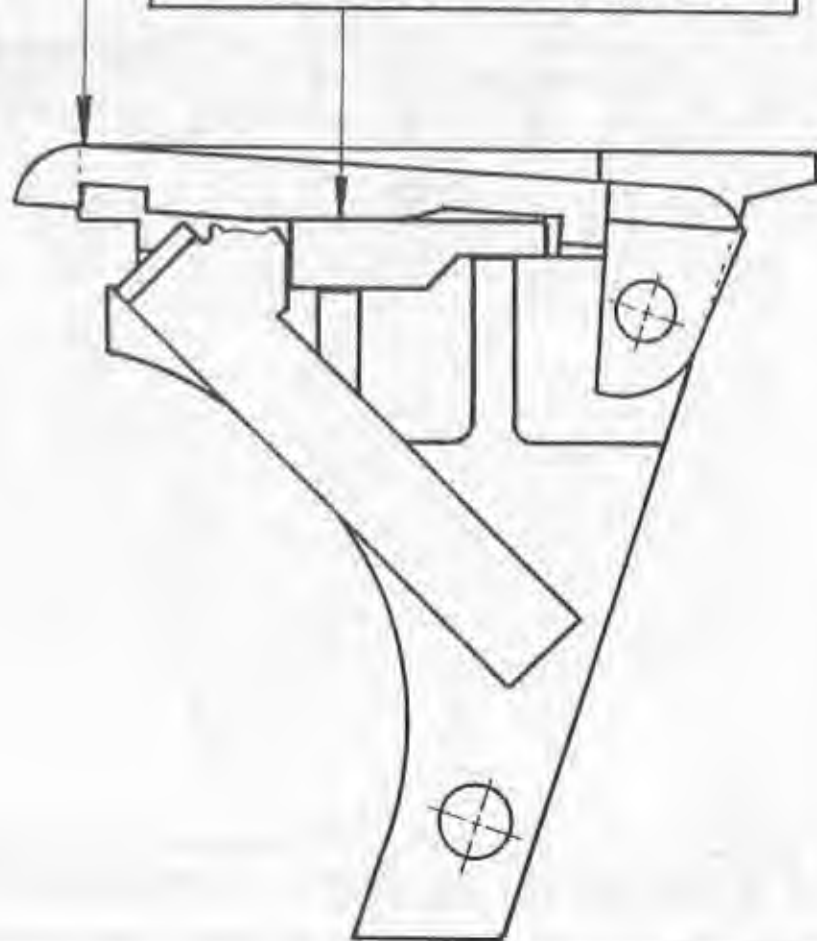
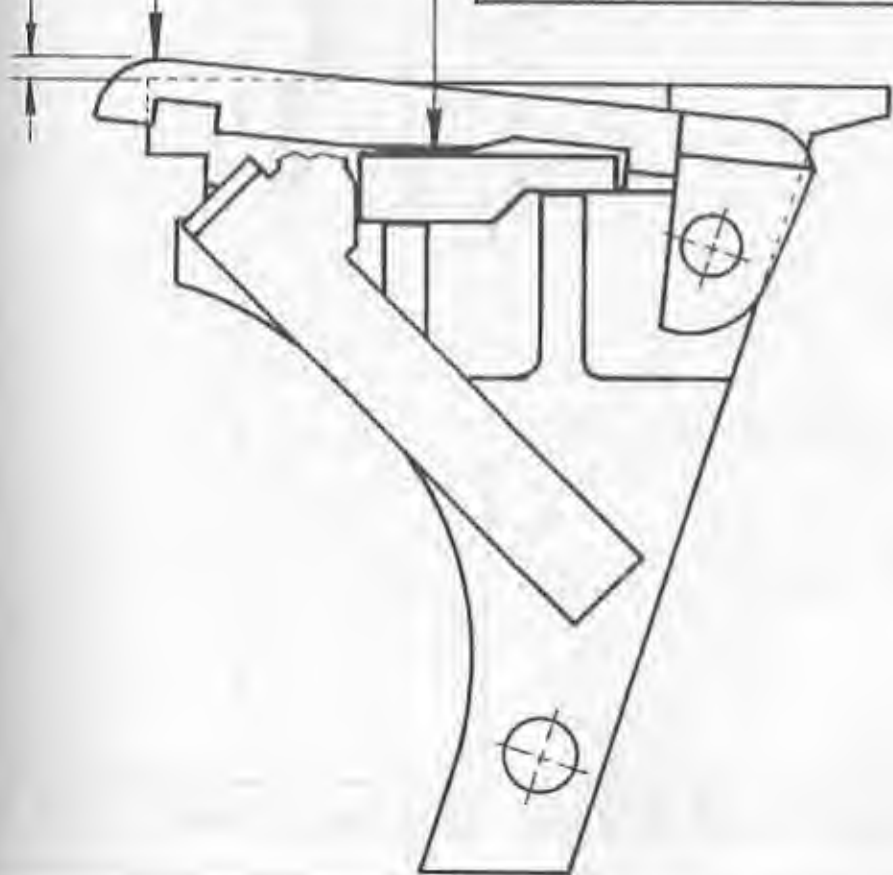
# CORRECT FITTING OF AUTO CONNECTOR TO TRIGGER HOUSING PLATE

OVER PIVOT—MUST BE LEVEL WITH TOP OF EJECTOR

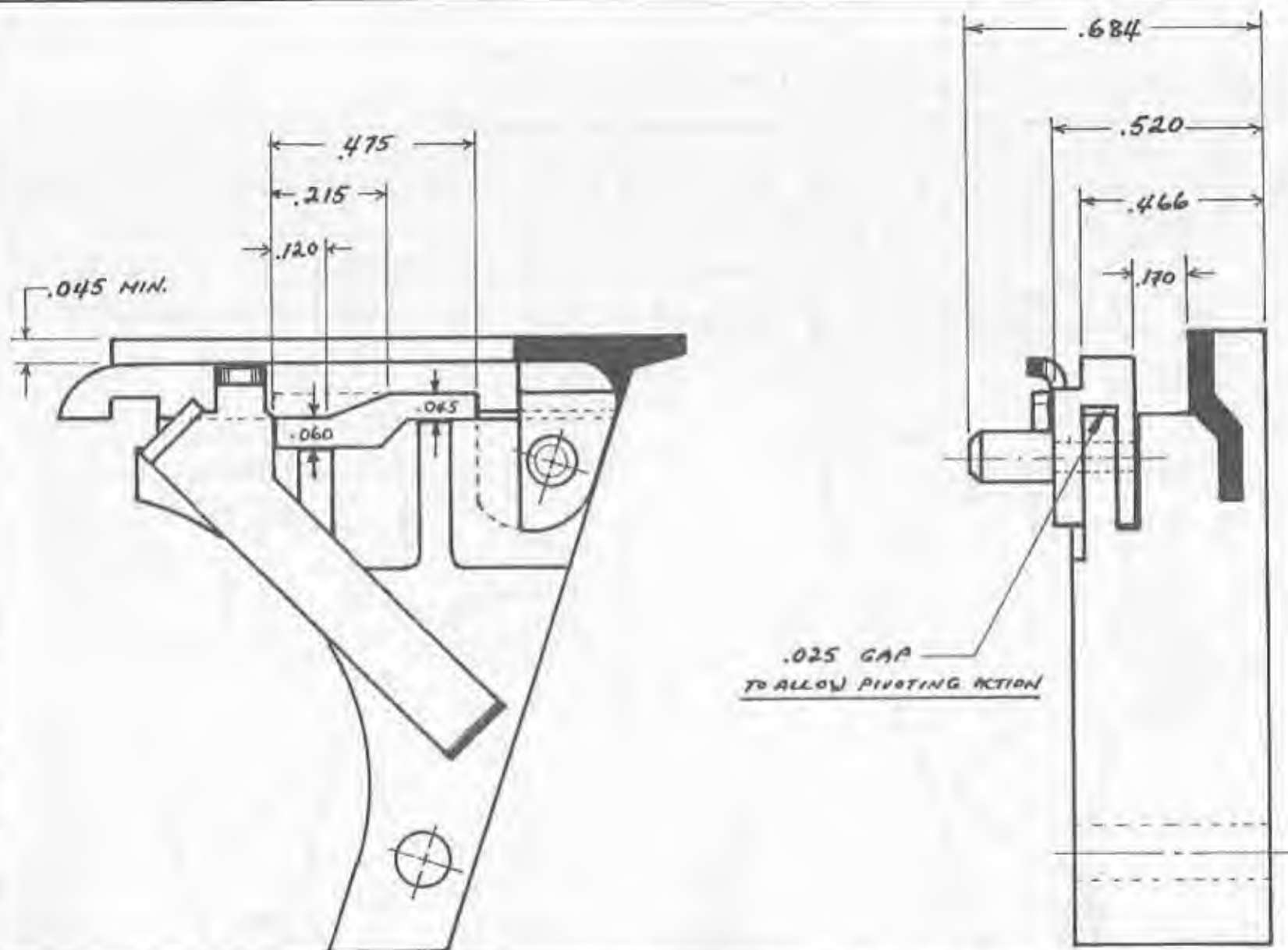
EXCESS PROTRUSION WILL BE DEPRESSED BY SLIDE UNDERSIDE PREVENTING FULL SEAR STRIKER ENGAGEMENT.

TRIM SHADED AREA TO LOWER PIVOT IF NEEDED

CORRECT LEVEL







ASSEMBLY GUIDE—AUTOMATIC CONNECTOR & TRIGGER HOUSING

## Chapter 5

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# Trigger Bar/Sear Modifications

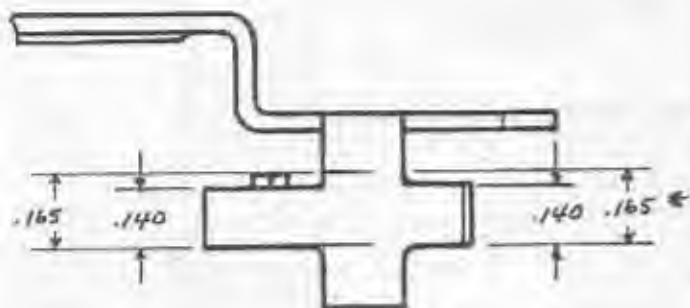
To allow the assembly of the automatic connector mechanisms onto the trigger housing, a small amount of metal must be trimmed on the right-hand side of the sear (upper and lower portion of the crucifix's right arm) on the edge of the top bent itself. The first area to be trimmed is the rear of the sear. This clearance cut will allow the seating of the connector while it's in its normal downward position. Next to be trimmed is the lower half of the sear, including the front bent where the spring is connected.

Be very careful not to file over the side of the small hole where the spring is attached. This is critical. If you inadvertently open up the hole, the spring will disengage itself and render the part useless. A small flat file is all you need to trim the area in the side of the sear. If required, the file marks can be smoothed simply by wrapping the same file with fine-grit emery paper and going over the same area just trimmed.

The purpose of cutting some metal in this area of the sear is to create a small gap inside the trigger housing plate to allow the left leg of the automatic connector to seat over the front interior of the housing's right wall. The clearance cut will also permit the sear to move freely during operation.

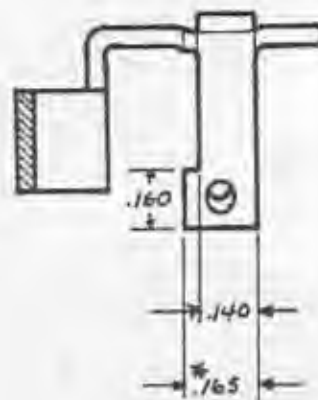
During fitting, make sure that the front-end portion of the sear is not rubbing tightly against the automatic connector's leg. There should be enough of a gap between the two parts to allow for free movement. If the sear is seated tightly against the connector's leg, the trigger pull will be hard and the sear/trigger bar will not return forward freely when the trigger is released. The upward and downward movement of the sear will also be affected. In turn, the automatic connector will fail to function. Ensure that any undue tightness is removed and that parts are polished smooth in all their contact areas to provide unimpeded functioning.

# TOP VIEW

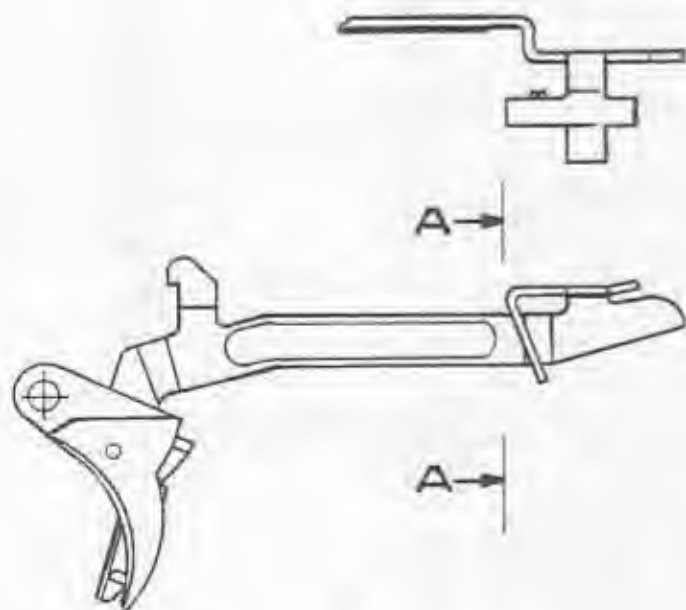


\* ORIGINAL WIDTH

# SECTION A-A

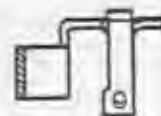


# SEAR MODIFICATION



FULL SCALE

# SECTION A-A





To do the necessary modification on the trigger bar and trigger mechanism housing, your first step is to learn how to assemble and disassemble the trigger group. You only need a 7/64-inch diameter push punch or steel rod to disassemble the required parts as shown in the photo.



After you have done all the work required and are ready to reassemble the components into working order, make sure that the slide stop spring (arrow) rests under the small pin, otherwise the slide stop will not work properly.



The original multifunction trigger assembly as it comes out of the frame.



To work on the trigger and trigger mechanism housing, the components must first be separated as shown.



Top view showing the modified sear (right) and unmodified (left). The right side of the sear (crucifix pattern) was trimmed by about .025 inch (maximum) to allow the part to clear the automatic connector's inner leg during movement.



If you don't wish to alter the part already in your pistol, but wish to create a separate full-auto conversion kit, you can purchase spare parts from Glock Works International or any Glock dealer. This pair of trigger assembly set and slide cover plate costs about \$40—enough to make two separate kits for both small and large calibers.



While trimming the right side of the sear all the way down to the front bent, make sure to avoid the end piece where the small hole for the spring was drilled. This hole is critical.



Trimming the sear to the required width only requires a small flat file moved in the direction shown, carefully avoiding the lower part of the bent where the small hole is drilled. Do the upper half next. Smooth the file marks by wrapping the file with medium-emery grit and going over the new cuts.



## Slide Cover Plate Modification

To create a selective-fire weapon it is necessary to incorporate a fire-selector device.

My first concept called for a slide-mounted fire selector such as the

one on a Glock Model 18. To make this work, the sear itself would need to be modified by adding a vertically mounted hump to the left side of the left arm. The left-side wall of the trigger housing has to be trimmed



An unmodified cover plate mounted at the back of the slide. This is where the fire-selector mechanism will be mounted.



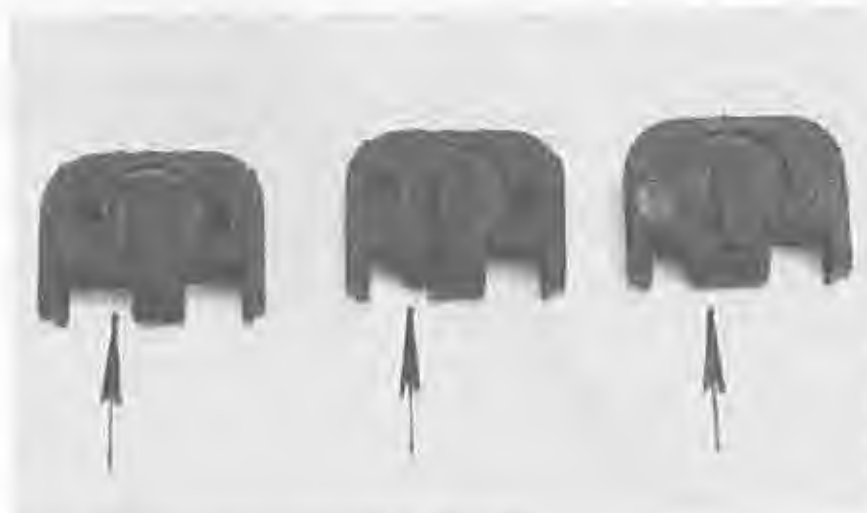
To disassemble the slide cover plate, push down on the plastic striker spacer sleeve using a push punch or similar tool to permit the plate to slide downward off its seat.



View showing two modified slide cover plates and a non-modified one for comparison. The left part shows the enlarged notch (arrow) at the right to clear the auto connector during slide assembly. This one is to be mated with the fire-selector group. The middle plate had the lower half notch (see arrow) cut only halfway. This could be used as a temporary "drop-in" full-auto tripper before building the fire selector. To assemble this part, the slide must first be locked open. Remove the unmodified plate and substitute this one. This part will provide full auto only and wears out eventually. The plate on the right is unmodified.



The complete fire-selector components before the riveting process.



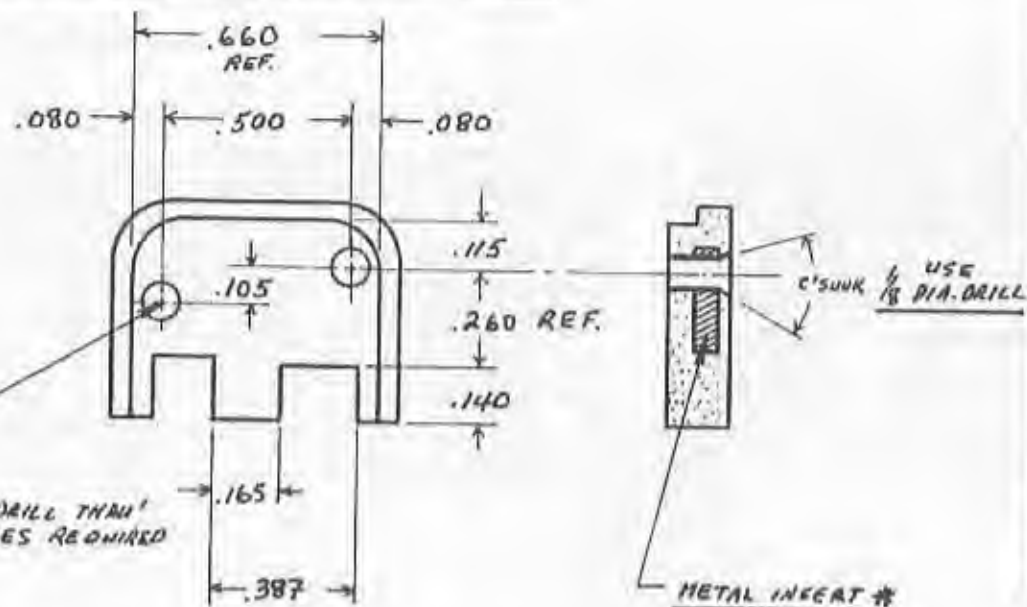
Same slide cover plates as viewed from the back.



The slide cover plate uses a hardened metal insert. To drill the two mounting holes, a carbide drill (#42) is required.

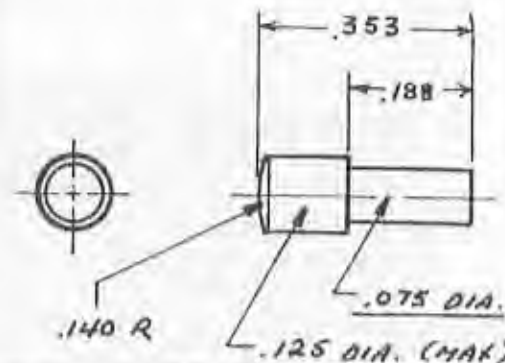
# SLIDE COVER PLATE MODIFICATION

FULL SCALE



\* PURCHASE CARBIDE DRILL TO DRILL 2 HOLES - METAL INSERT IS HARDENED.

# AUTO. CONNECTOR PIVOT PIN



FULL SCALE

MATERIAL - DRILL ROD

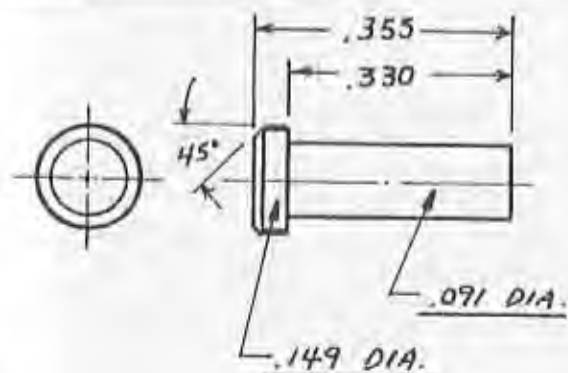
RUGER 1022 FIRING PIN RETRACT SPRING.  
FULL SCALE

INSERT PLUNGER  
POINT ON SMALL COIL.

WAVY LINE

PLUNGER SPRING

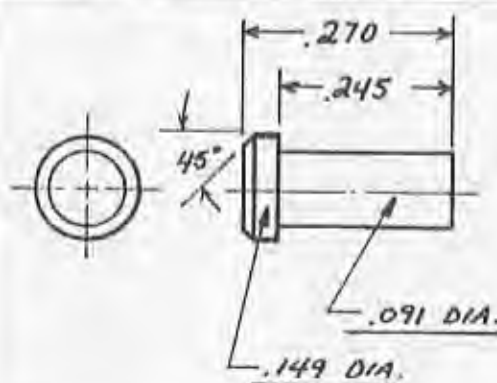
# SELECTOR PIVOT PIN



FULL SCALE

MATERIAL:  
MILD-STEEL ROD

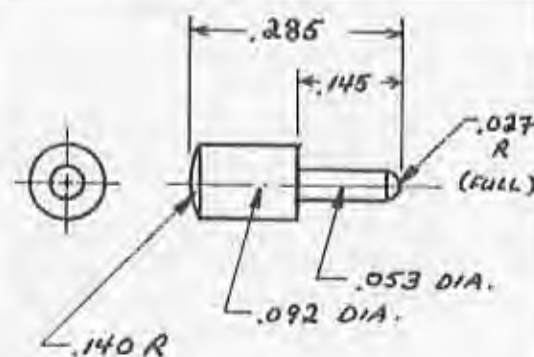
# SELECTOR INDEX



FULL SCALE

MATERIAL:  
MILD-STEEL ROD

# INDEX PLUNGER



FULL SCALE

MATERIAL:  
DRILL ROD

to clear the welded hump, which would be activated by the slide-mounted fire selector. This is probably close to the Glock Model 18 system.

I realized that this would be a more involved procedure than I wanted. Finally, it became clear that the fire selector would function just as well when mounted to the back plate of the slide with little redesign to the tripping provision for full-auto operation. This led to the design of the simplified automatic connector system activated by a fire-selector device mounted directly to the factory slide cover plate. This new setup turns out to be perfectly functional and perhaps simple enough that anyone that knows how to use a hacksaw and file can do the conversion quite easily.

The slide cover plate modification simply requires two separate holes in each side of the part. You will, however, need a carbide drill for these holes because the metal insert has been hardened. You can order this drill from any gunsmith supplier like Brownells, or a Sears hardware store. Your local gunsmith may also have one sitting around. The drill size is #42 (3/32-inch diameter).

After drilling the two holes, manually countersink the bottom of the holes at the back of the plate (until you hit the metal insert) with a regular 1/8-inch diameter drill. The countersunk holes will accommodate the flared end of the rivets during assembly. The exact locations of these holes are specified in the working drawings in this chapter.

# Assembly and Disassembly of Conversion Parts

## TRIGGER BAR AND AUTOMATIC CONNECTOR

The assembly and disassembly of the automatic connector device from the pistol requires the removal of the trigger group from the receiver frame. The Glock is one of the easiest semiauto pistols to disassemble, perhaps even easier than the much touted Model 1911. All you need to completely strip this plastic frame gun is a 7/64-inch diameter drift punch, a rod of the same diameter, or even a straightened coat-hanger hook.

You can start by separating the top end (barrel and slide group) from the lower half of the pistol (frame and trigger group). From the left side, push all the pins out of the frame. Pull out the slide stop from the frame. Remove the locking block next, using the tip of the drift punch to pry it up from the left side to prevent damaging the trigger bar. As the block comes partly off the frame, lift it from the frame with your hand. Once that is done, place the point of the drift punch underneath the ejector and pull up on it. The trigger mechanism housing should move slightly upward. Pull out the rest of the trigger group housing with your hand. The trigger group is now ready to be disassembled.

To disassemble the trigger sear from its housing, twist the trigger bar

to the left until the left arm of the sear (crucifix) clears its assembly slot in the left side wall of the housing. Now pull the trigger bar up and out of the housing. Its bent front-end portion connects to the extension spring. The other end of the spring is attached to the rear of the housing. The housing and trigger can now be separated simply by disengaging the spring from both parts. With the spring detached from both parts, you can do the necessary modifications (housing and trigger sear) if you have not already done so.

Assuming that the automatic connector is now ready for installation and that the modifications to both the trigger mechanism housing and trigger bar sear have been completed, now is the time to reassemble the trigger group. The first step is to reconnect the spring to the housing and trigger. Twist the trigger bar toward the left and insert the bent front end of the sear (crucifix) inside the housing with the spring underneath it. Realign the left arm of the sear with its assembly slot in the left-side wall of the housing, push it in, and straighten the position of the trigger bar. The trigger bar group should be fully assembled at this stage.

To install the automatic connector in the trigger housing, the front of the trigger bar must be pushed downward until there is enough room for the connector pivot pin to be inserted in its assembly hole





After the conversion process has been completed, you can start the process of reassembling the trigger group by connecting the spring back to the trigger and trigger-mechanism housing as shown.



This is the proper way of connecting the spring to both the trigger and trigger-mechanism housing.



To reassemble the sear (crucifix) and its spring inside the trigger housing, first insert the lower front bent of the sear, slightly twisting the trigger bar to the left while realigning the left arm of the crucifix to its assembly slot behind the ejector.



As soon as the left arm of the crucifix is in its assembly slot in the housing, pull straight back on the trigger bar. Now the sear and spring should be fully seated in their proper order inside the housing.



After the sear is fully in place, pull the trigger bar downward as shown to make room for the automatic connector assembly.



Snap the automatic connector into position and insert the pivot pin. The assembly of the trigger group and connector is now complete.

after the automatic connector is fully seated. Place the connector in its seat, align the assembly holes, and install the pivot pin. The installation of the connector in the trigger mechanism housing is now complete.

To insert the newly converted trigger group into the receiver frame, simply reverse the disassembly procedure as follows: Insert the trigger group back into its seat in the frame until the assembly holes at the back of the frame line up. Now insert the pin to secure this part into place. As you insert the trigger group at the rear of the frame, the trigger itself must be simultaneously inserted into its assembly pocket above the trigger guard.

After securing the seat/connector group to the rear of the frame, reassemble the slide stop, trigger, and locking block. To do this, first drop the slide stop into its seat to the left side of the trigger. Then place the locking block into its seat riding over the trigger and slide stop. Align the pivot holes of both the trigger and slide stop to the frame hole (lower hole) and locking-block assembly hole together. Insert the larger pin from the left side to connect all three parts to the frame. The last pin is for the upper section of the locking block. This pin is also inserted from the left. Notice that inside the block, the upper part of the slide stop spring wire was sticking out. The wire spring must be depressed (use a small screwdriver or small pointed rod to push the spring down) until it rests below the pin. Now, push the pin all the way to its fully locked position. Failure to position the slide stop spring properly as described above will prevent the part from functioning properly. The lower half of the pistol is now fully assembled.

**NOTE:** During the final fitting of the conversion parts, you may have to assemble and disassemble the trigger group as described above several times until all parts work properly. Master the stripping procedure as you go along and you will eventually appreciate how fast and easy it is to completely strip the components of this pistol.

## FIRE-SELECTOR MECHANISM

Of all the conversion parts, the fire-selector group is the easiest and fastest piece to install or remove. It can be done even without stripping



This close-up photo shows a properly installed fire-selector mechanism. The fire selector must be fitted snugly against the plastic part with minimum upward play to ensure rigid connection after riveting. The part, however, must be free to move from one position to the other when manipulated.



This close-up photo shows the snug fit of the fire selector to the slide cover plate after the riveting process. Allow only a .003-inch gap between the plastic part and fire selector after riveting. Slight tightness is acceptable as long as the fire selector moves when activated manually. The head of the rivet controls the tightness.



Close-up view of the fire selector showing the head of the left-side rivet removed to show the oblong slot that will allow the part to move sideways to disengage its position from one setting to the other.



Close-up view showing the fire selector pushed to the left to clear the index notch. The spring-loaded plunger inside the selector will automatically lock the setting by forcing the selector to wedge against the index notch being selected.



The slide cover plate with riveted fire selector as seen from the back. File any excess portion of the flared rivet flush so that the part can be inserted freely during its reassembly to the back of the slide (right).

the pistol. Simply insert an empty magazine and pull the slide all the way back. The slide will be locked open by the slide stop.

Rest the pistol upside down on a solid surface and place the point of the drift punch on the exposed shoulder of the striker plastic spacer sleeve, seen at the rear opening underneath the slide, and push it toward the muzzle until it stops. Now the slide cover plate can be slid off its assembly seat. Be careful not to lose the spring-loaded plunger at the right-hand side of the plate while you are separating the parts. Do this slowly. After removing the unmodified cover plate install the substitute back plate containing the fire-selector mechanism. Your Glock is now ready for selective-fire operation.

# Fitting New Parts

As we have seen, building a prototype gun or new parts to improve an existing design is a very complex procedure that depends on the features of the gun and the equipment and skill of the person building it. Coming up with the simplest mechanism that requires a minimum of tools and know-how to transform a semiauto Glock into a reliable selective-fire machine pistol is a feat in itself. It is quite probable that many independent gun designers, amateur gunsmiths, and hobbyists around the world have already tried to convert this famous pistol to deliver full-auto fire like the original Model 18.

The conversion parts in the text have been featured because of their utter simplicity and ease of manufacture. All parts are virtually hand-made. In this book, every modification of original factory components and design formats of new parts started with a fresh sheet of paper and evolved into a series of mechanical designs. After the final conversion system was selected, the prototype parts were built and fitted to the modified factory components. Sometimes the parts worked and sometimes they didn't. Manufacturers call this the debugging process.

Fitting the new parts to function reliably with the modified factory components into a workable state is possibly the most critical part of the conversion procedure. No matter how simple the parts may look or

function, you will always encounter a problem along the way. The Glock conversion system is no exception, but from its inception on paper to its final format in metal, all conversion parts have gone through the debugging stage. The end result is a functional, highly reliable selective-fire machine pistol that can compete toe to toe with the factory's own Model 18.

In every chapter in the text, I have done my best to make each step a learning experience for the reader, whether an experienced gun designer or an amateur gunsmith. By utilizing professionally prepared technical illustrations of weapon functions in semi- and full-automatic and combining them with high-quality photos showing the modified factory components and their proper relationships with the full-auto conversion parts, one can clearly see and understand how the whole system works step by step.

Since I already did the hard part of the job (designing the conversion parts and perfecting the prototype parts), the reader should have no difficulty learning how it was done. However, I have to stress again at this point that in no way will I advocate anyone's converting weapons (of any type) to fire in full-automatic mode without prior approval from the federal government. I have presented this material





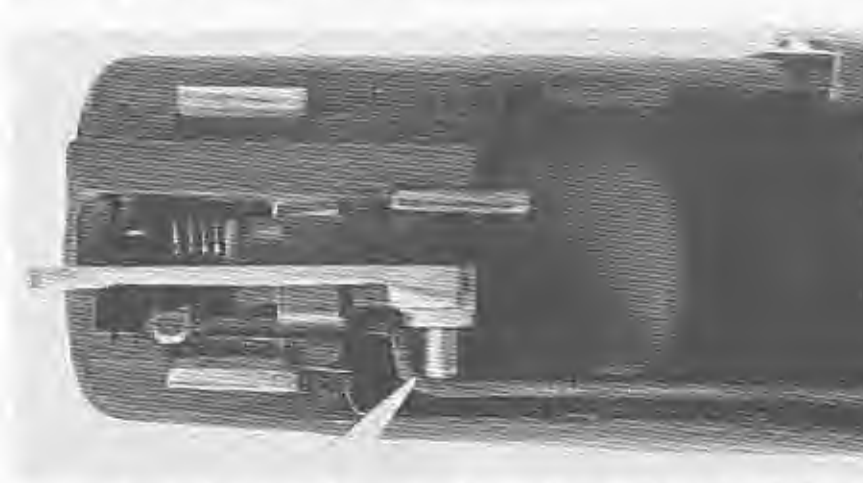
When the striker is cocked, the trigger moves forward and its built-in safety pops out. Note the distance of the gap between the top portion of the built-in safety and the inside of the frame (arrow). In the converted model, this gap is much smaller.



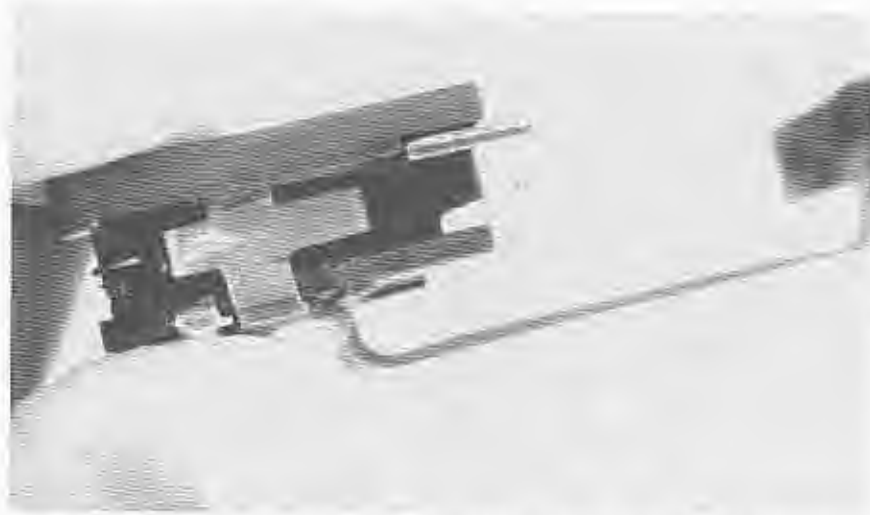
View showing the converted pistol's trigger moved forward after the striker is cocked. Note the much smaller gap between the top end of the built-in trigger safety and the inside of the frame (see arrow). Make sure the trigger safety pops out like this one after the conversion process to ensure that the trigger safety is not voided.



The sear of the unconverted pistol is shown in its full forward position with its bent front end nearly touching the front wall of the trigger mechanism housing. In the converted gun, this forward movement is reduced slightly.



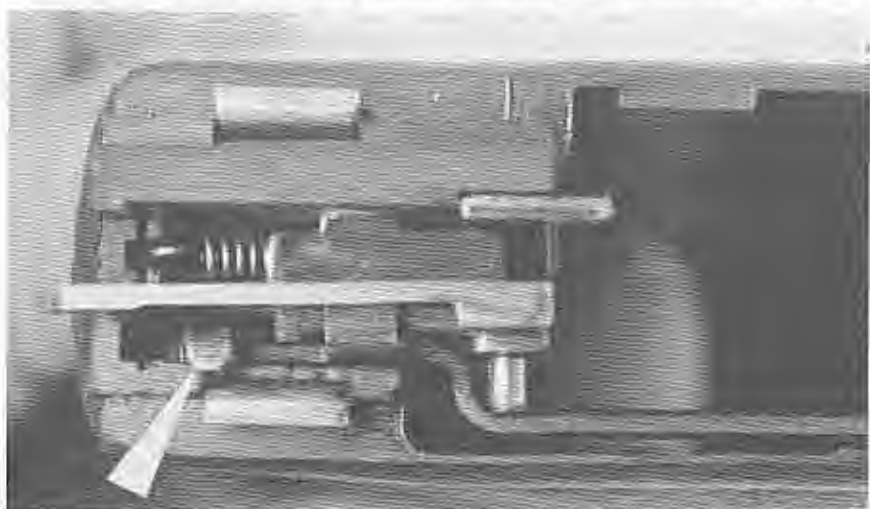
The large head of the automatic connector pin, seen here resting against the bent of the trigger bar (arrow), restricts the full forward movement of the trigger when the striker is cocked. The location of the pin hole is critical. Make sure to follow the dimensions in the working drawing.



Top close-up view showing the gap on the right side of the sear (crucifix) while assembled inside the trigger mechanism housing. This gap will accommodate the assembly of the automatic connector and also allow clearance of movement for the sear during operation.



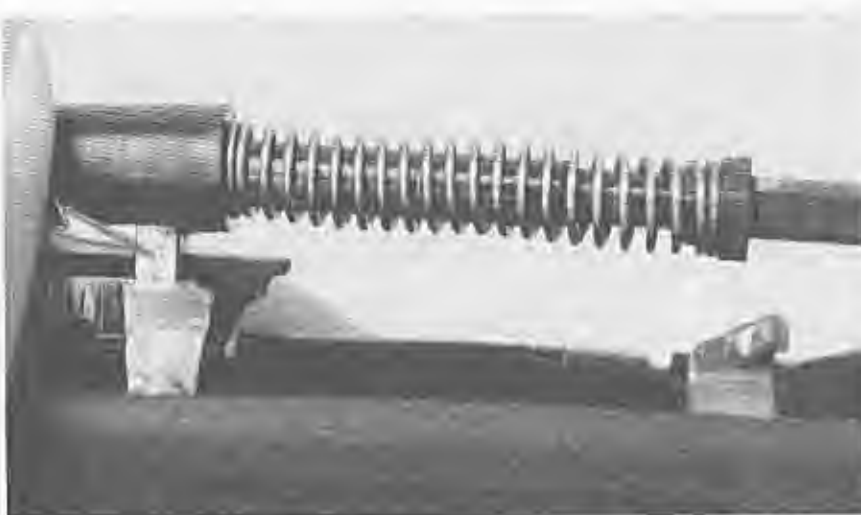
Close-up view showing the automatic connector in place covering the gap from the metal removed from the right side of the sear.



Close-up top view shows the fully assembled trigger lockwork with the automatic connector in place. Note that the disconnector is in its normal position (arrow) far from the side of the automatic connector.



Close-up showing the disconnector being pushed to the left (left arrow) by the slide during rearward recoil. Ensure that there is enough of a gap for the disconnector to function properly. If the automatic connector is too thick, its movement is restricted. Note also in this photo that the trigger is pulled. The ribbed area of the trigger bar is facing the connector pivot-pin head. You should be able to insert a piece of paper into their gap (right arrow) to ensure unimpeded movement during trigger pull.



During fitting of new parts, watch that the right side of the striker underlug (arrow) is not rubbing tightly against the left side of the auto connector, because this will affect positive ignition. The slide is also hard to pull to the rear if the part does not have enough clearance to travel. Check the automatic connector for any heavy rub marks and remove them until parts work smoothly.

strictly for academic purposes for those aspiring designers, gunsmiths, and hobbyists who wish to advance their learning skills in modern firearms mechanics. When it comes to prohibited weapons, it is solely your responsibility to ensure that no federal laws are violated when you decide to adopt the conversion process featured in this book to your own Glock pistol. **BE WARNED!**

The overall dimensions of each conversion part (factory or new) are measured exactly to the components used in this book's Glock Model 21, .45 ACP. There may be some fitting required for certain components, mostly the automatic connector or fire-selector mechanism. If the dimensions specified in the book are closely followed while building the conversion parts, little or no fitting at all will be required.

I have stressed clearly throughout the book the importance of each part functioning freely to ensure reliable operation of the gun after the



Your area of concern lies primarily in fitting the automatic connector, especially on its lower-half left-side area just above the assembly hole (arrow) where its side-to-side movement is limited. Make sure that any heavy rub marks that may occur in this area are removed. To do this, simply lay the part on a piece of medium-grit emery and abrade the rub marks until they disappear. Reassemble this part and try again until the problem is corrected.

conversion process is done. This is the same basic principle that must be observed when you do the final fitting to the gun's modified trigger assembly. Check where it is tight or binds and correct it before testing the pistol with live ammo. Always ensure that after the final fitting of components is done that the weapon's mechanical safety is not compromised. If your life and the lives of others you wish to protect depend on this gun, make sure that it works safely and reliably. Do not rush! Do it right!

The Glock pistol trigger mechanisms have excellent interchangeability among models (except for their trigger mechanism housing/ejector and trigger/trigger-bar assembly). Trigger groups of pistols using such larger and longer cartridges as the .45 ACP and 10mm are interchangeable. The 9mm, .40 S&W, and .357 SIG trigger groups are also 100 percent interchangeable. Despite the differences among models,

the modification required for the factory trigger mechanism housing, trigger/sear, and slide cover plates for all models are the same.

Therefore, dimension specifications for all the conversion parts required to complete the gun project are based on the book's drawings.

# Test-Firing Procedures

Here is the best part of the project. Will it work or not? This is undoubtedly the primary question everyone will ask himself after the conversion work is completed. The only way to find out is to test-fire the gun.

Before firing any live rounds in the newly converted pistol, the following final checks must be done. **IMPORTANT:** Test the functioning of the fully assembled pistol (without a magazine inserted) by simulating a firing cycle. While doing this test, try to feel the gun from the inside by slowly hand-cycling the action back and forth. There should not be any unnecessary tightness, hesitation, rubbing, or grittiness. The feel of the gun must be the same as before the conversion process was done, whether the pistol is set to fire in semi- or full automatic mode.

1. Ensure that all the components affected by the modifications are properly fitted, polished, and tempered (as specified) and functioning smoothly when the gun is hand cycled.
2. Pay particular attention to the timing of the striker release when the weapon is set at full auto. It is of primary importance that the auto-

matic connector only trips the striker at the very last stage of slide closure to ensure that the barrel is fully locked with the slide at the moment of firing.

3. When set at full-auto position (trigger pulled, slide retracted to the rear then manually assisted forward simulating recoil and counter-recoil sequence), the fire selector must pass over the radiused end tail of the automatic connector with minimum hesitation while it pushes down the sear at the last .050 - .065 inch of slide closure releasing the striker to fire the gun.
4. Do not try to fire the gun if you feel tightness when the slide is pulled back or the trigger pull is tight and will not snap back forward by itself when released after being pulled. This must first be corrected, otherwise it may damage the components of the gun when fired. Disassemble and strip the trigger group and check for any binding or heavy rub marks on the automatic connector (both sides, top part, and the step on the right side). The trigger bar must also be checked (inside ribbed area that touches the connector pivot pin head). Lightly file and polish any rub marks on each component affected and reassemble and see that the problem has



been eliminated.

5. After you are satisfied that all pistol components are functioning properly and smoothly, you may proceed with the live fire test. It is of primary importance that when you first try to shoot the pistol with live ammo, *do not* load the magazine with more than five rounds whether the gun is to be fired in semiauto or full auto. You may load more rounds in the magazine as you gain more experi-

ence in controlling it in full-auto mode (assuming that the gun functioned reliably in both semi- and full-auto firing). It's like driving a new car; you do not want to drive fast until you learn how to totally control it at any speed you choose. It's safer this way.

If things go well after the test, congratulations. You are now the proud owner of a 21<sup>st</sup>-century machine pistol. Enjoy your new toy!

## Parts and Accessories

Glock G.m.b.H. (main Glock pistol manufacturer)  
P.O. Box 50  
A-2232 Deutsch-Wagram, Austria

Glock, Inc. (Glock manufacturer in USA)  
6000 Highlands Parkway  
Smyrna, GA 30082

Glock Works International (Glock parts supplier)  
9 Pennywise Lane,  
Old Saybrook, CT 06475-2228

Aro-Tek Ltd. (Glock Law 2000 pistol and accessories)  
206 Frontage Road North,  
Suite C  
Pacific, WA 98047

Caspian Arms Ltd. (makers of Hybrid barrel and matching slide)  
14 North Main Street  
Hardwick, VT 05843

CCF/Swiss Inc. (Glock Model 18 detachable folding shoulder stock)  
P.O. Box 29009  
Richmond, VA 23242

Sturm, Ruger & Co., Inc. (firearms manufacturer)  
200 Ruger Road,  
Prescott, AZ 86301-6181

Brownells, Inc. (gunsmith tools supplier)  
200 South Front Street,  
Montezuma, IA  
50171-1000